IRON TRADE REVIEW
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# Increase Rate of Mill Operation

## New Business Piles Up Backlog of Orders and Lengthens Delivery Time on Bars and Shapes—Car and Rail Buying Continues in Unabated Volume—Iron Prices Firm

SPURRED on by the backlog of new business accumulated during the present buying movement, producers have increased the rate of mill and furnace operations to a point not equaled in many months. Independent steelworks in the valley are operating at 86 per cent of capacity; from 88 to 90 per cent of the open-hearth furnaces of the Carnegie Steel Co. are active; and 93 per cent of the steelmaking capacity of the Illinois Steel Co. is engaged. The Illinois company's open hearths have operated at 78, 83, 90 and 93 per cent, respectively, for the past four consecutive weeks. Valley sheetmakers are employing 77 per cent of their rolling capacity, the highest rate since last July.

The volume of new inquiries is large, but the amount of actual business done is slightly below that of the preceding week. Thus far during the month orders taken by the Steel corporation and by at least one of the largest independents have exceeded shipments. This relationship is reflected in the lengthening of the delivery time on finished steel, particularly bars and structural shapes. Certain products obtainable in December on a week or 10 days' notice, now are scheduled by some producers for shipment from four to six weeks after date of order.

**Car Buying Continues**

Actual bookings of car orders now appear to have been much heavier than is generally known. For freight cars now before Chicago builders it is estimated 50,000 tons of plates, shapes and bars and 7000 tons of wheels and axles will be required. The Pennsylvania Railroad Co. has placed 2000 box car bodies with eastern builders and is inquiring for 2000 stock car bodies. The Norfolk & Western is in the market for 4000 hoppers. Track material is being ordered freely, the Chicago & Northwestern having awarded 46,000 tons of rails and the Soo Line 8700 tons.

Structural steel awards have declined sharply from the reported total of 52,581 tons last week to 20,937 tons. Among the important inquiries pending are 18,000 for the Dupont hotel, New York; 5000 to 6000 tons for a building in the Grand Central district, New York; and 2000 tons each for an amusement company, Chicago; an insurance building, Boston; and shop buildings for the Southern railway, Birmingham. Recent awards include 2400 tons for a New York loft building; 2000 tons for the Kentucky hotel, Louisville, Ky.; 1950 tons for bridgework, Louisville & Nashville railroad; 1550 tons for a New York loft building; and 1400 tons for a plant addition for the Westinghouse Electric & Mfg. Co., Essington, Pa.

**Iron Prices Are Firm**

Firmer prices dominate the pig iron market, although indications of advances are not uniformly pronounced in all markets. No. 2 foundry iron is strong at $24 in the Chicago district, where an advance of 50 cents is predicted. While basic iron is quoted at from $22 to $23, valley, one producer has announced $22.50, valley, as the minimum after Feb. 1. More interest is being manifested in second quarter requirements. A reduction in the price of English ferromanganese to $109, duty paid tidewater, has been met by domestic producers. While this quotation still is nominal, it is believed lower prices could be obtained.

IRON TRADE REVIEW composite of 14 leading iron and steel products reflects a slight stiffening of prices. The week's figure is $43.39 as compared with $43.35 last week and $43.02 four weeks ago.

Statistics for December, making annual comparisons possible, show that in 1923 exports and imports of iron and steel from and to the United States were slightly in excess of those in 1922. Imports of pig iron totaled 367,820 tons last year as against 383,444 tons in 1922.

**British Strike Ends**

Prompt settlement of the strike of locomotive firemen in England relieves the British iron and steel industry of the restrictions caused by curtailed transportation service. Before the strike ended 15 blast furnaces had been damped down and operations of the entire industry had been reduced 10 per cent. It is expected several weeks will be required to clear the freight congestion. European steel producers are engaging in price cutting, despite the absence of British competition.

**Business Trend and Chart Section Page 341**

IRON TRADE REVIEW

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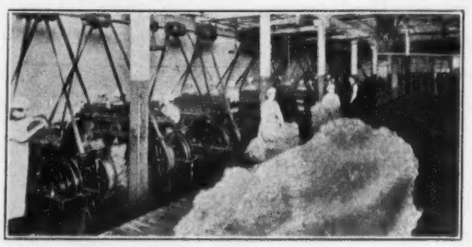
## *Where Does Steel Go?*

IF YOU have been reading the short articles appearing every second week under the heading "Large Uses of Steel in Small Ways," you doubtless have been surprised at the aggregate tonnage of steel used annually for such small articles as pins, pens, corset stays, steel wool, etc. The obscure uses of steel covered in the five articles of the series thus far published account for more than 75,000



Making Steel Wool (See page 346)

tons of the annual output of American mills.

Perhaps you have sensed the connection between these one-page articles and IRON TRADE REVIEW's annual consumption statistics. Ever since 1921, when IRON TRADE REVIEW published the first comprehensive analysis of the distribution of steel by consuming industries, interest in the question, "Where does the steel go?" has been mounting. The thumb-nail sketches, comprising "Large Uses of Steel in Small ways" is another step in IRON TRADE REVIEW's effort to answer the question.

## Do You Know That—

**The combined financial rating of IRON TRADE REVIEW subscribers is approximately four billion dollars. More than 43 per cent are rated at $500,000 or more. Financial stability should be the first consideration in dealing with a prospective buyer.**

# Second Quarter Iron Is Sought

## Prices Advancing in All Markets in Renewed Interest and Buying—Coal Strike Threat Causes Melters To Seek Protection—Selling Becomes More Active on Rising Prices—Quiet Negotiations Being Undertaken

PITTSBURGH, Jan. 29.—Activity in pig iron is slightly increased, although many producers are holding out for $25 on large tonnages, which is expected to be the market by April since a sale of 3000 tons of basic to the National Malleable & Steel Castings Co. at $22, valley. Several inquiries are current, including a round tonnage for the Sharon Steel Hoop Co., 5000 tons for the Mansfield Sheet & Tin Plate Co. and 3000 tons for Follansbee Bros., mostly for three months delivery. The Trumbull Cliffs Furnace Co., which has placed a rush order for relining its blast furnace, may be a buyer in the open market for basic for at least one month's supply of about 20,000 tons, as it has no iron piled. Basic iron is quoted at $22 to $23, valley. The Shenango Furnace Co. will advance its prices 50 cents Feb. 1, to $22.50, valley. The Bethlehem Steel Co. now is quoting $22, Johnstown. The Mesta Machine Co. has bought 600 tons of Bessemer at $23 valley. Recently single carload orders have been placed at $23.50. The Shenango Furnace Co. advances bessemer 50 cents to $24, Feb. 1. Bethlehem already has advanced this grade to $25, Johnstown. The Standard Sanitary Mfg. Co. is reported to have closed a tonnage of southern iron for its Louisville, Ky., plant for second quarter at $22.50, Birmingham. One producer is advancing the minimum to $23, Birmingham. Five or six foundry iron orders already have been taken for second quarter at $24, valley for No. 2 foundry. The total tonnage of this sort is about 5000 tons, the largest order being for 1000 tons consisting of several grades. Other buyers are negotiating quietly as they are not sure this is the right time for closing but fear to wait too long lest they pay righer prices in the coal strike period. The Standard Sanitary Mfg. Co. is understood to have obtained prices informally for its Allegheny and New Britain plants for April to June requirements. Other large users are showing interest. Makers now have a minimum of $23, valley, or Johnstown, for the remainder of first quarter and are quoting nothing less than $24 for second quarter for No. 2 foundry with the regular 50 cent silicon differential. A local buyer has closed for 5000 tons of gray forge at $23.27, delivered Pittsburgh. The valley minimum now is $24.27, delivered. A small sale of low phosphorus is noted at $29, valley, $28, Lebanon and $27, Standish.

### Buying Movement Expected

Boston, Jan. 29.—Sales of the past week in Boston show considerable improvement over the total for the week previous but the expected buying movement for second quarter delivery still holds off. Prices for the moment are a little softer in New England. At least two soft spots have appeared in the eastern Pennsylvania field and small sales of No. 2X iron, silicon 2.25 to 2.75, from that district have been made during the week at $22.50 furnace or $26.15 delivered. Buffalo furnaces are well booked for first quarter tonnage and are holding fairly firm at a $23.00 base which is out of line in comparison with any of the active Pennsylvania furnaces. Despite this fact some sales of Buffalo iron have been entered. One small lot of No. 1X iron was sold within the last few days at $24.50 at the furnace or $29.41 delivered. Recent sales include 500 tons from a Rhode Island consumer, 500 tons from each of two Massachusetts consumers, an unstated tonnage of malleable, probably 700 or 800 tons, to a Connecticut consumer, and several scattered 200 and 300 ton lots. A Rhode Island consumer is in the market for from 500 to 1000 tons and nearly all the principal melters in the district are open to commitments for second quarter.

### Buying Is For Second Quarter

New York, Jan. 29.—Pig iron buying is more active and total sales in this territory during the past week aggregated more than 15,000 and probably close to 20,000 tons. The principal transaction was the purchase of about 3500 tons of basic iron by a New England consumer. The Worthington Pump & Machinery Corp. has distributed its tonnage and the Otis Elevator Co. also has taken action. Several other melters in this general territory bought at least 1000 tons each. Eastern Pennsylvania producers as a rule are inclined to ask somewhat higher for the second quarter than for first quarter. Buffalo producers are asking the same prices for both quarters, although one maker is asking a premium on first quarter tonnage as compared with second quarter. The eastern foundry market now is generally established at $22.50, base furnace, subject to some equalization of freight rate differentials, and some tonnage has been offered at $22, base furnace. On Buffalo foundry the market is $22, furnace, although somewhat lower has been done in some instances on Buffalo iron.

### Inquiries Continue Heavy

Buffalo, Jan. 29.—Total inquiry for all grades of iron is between 12,000 and 15,000 tons. A local maker placed on its books about 10,000 tons of foundry and malleable business. Several 1000-ton lots were placed and at least one 1500-ton order. Daily bookings on two days ran 3000 tons with this maker towards the beginning of this week. Prices are $22.50 for No. 2 plain (1.75-2.25 silicon) with this price being shaded on round tonnages and on shipments where freight rates are a prime factor. On No. 2X (2.25-2.75 silicon) as high as $23 has been obtained. A large portion of the iron booked is for second quarter.

### Foundry Prices Firm at $24

Cleveland, Jan. 29.—Northern and southern Ohio pig iron producers have booked such satisfactory tonnages they are firmer on quotations than in some months. One furnace interest has sold 1000 tons of No. 2 foundry iron at $24. valley furnace, while malleable iron is held by two valley producing interests also at $24. Considerable foundry iron has been sold in southern Ohio at $24, Ironton, and this grade appears firm at that quotation. Detroit furnaces also are holding to $24, furnace. Sales have been made at Buffalo at $22.50, furnace, one lot of slightly less than 1000 tons of foundry iron going today at that price. Other Buffalo producers ask $22. No basic sales have been made lately here.

Sales being made throughout northern Ohio at $24, furnace, or $24.50, delivered Cleveland, are for first quarter delivery. However, one important Cleveland producer and another Cleveland interest with outside stacks refuse to quote directly, and while not out of the market, yet they are putting every inquiry through upon its merits. Some offer to sell second quarter foundry and malleable at $24, but they admit few consumers have availed themselves of this offer as yet.

### Strong at Chicago

Chicago, Jan. 29.—Northern pig iron is strong at $24, furnace for No. 2 foundry, with a general advance of 50 cents probable by the end of the week. One large selling interest predicts $25 within a month. Inquiry and sales both are large. It still is apparent that many melters have underbought for first quarter and must fill in liberally. A Wisconsin melter is inquiring for 1800 tons of foundry and 900 tons of malleable for delivery February to May. Milwaukee user has bought 1000 tons of malleable for first half. Michigan automobile manufacturers have been heavy buyers of foundry grades. A Chicago melter has bought 1000 tons of foundry iron and numerous sales of 500 to 1000 tons have been made in Chicago territory. A Wisconsin melter is inquiring for 3000 tons of silveries.

The lowest quotation on southern foundry iron is $23, Birmingham, with sales here negligible. Low phosphorus is inactive. Charcoal sales are mostly of carloads. The quotation is strong at $26, furnace.

### Sales Are of Small Tonnage

Cincinnati, Jan. 29.—With pig iron prices tending upward, the market presents a strong front, although recent purchases by consumers in this district, with one or two exceptions, involved only small tonnages. Small-lot buying has been active and in the aggregate represents a satisfactory volume of business. Producers of northern iron are asking $24, Ironton base, with the exception of two furnace interest, which are holding for higher market levels. The southern market ranges from $22.50 to

$23, Birmingham base, but second quarter tonnages are not entertained under the $23 level. The Columbus Malleable Iron Co., Columbus, O., closed with a southern Ohio producer for 800 tons of northern iron, while the Standard Sanitary Co., is reported to have bought a large block of southern iron from St. Louis, Ky., plant. The Hoosier Iron Works, Kokomo, Ind., bought 1000 tons in the Chicago market, while the Estate Stove Co., Hamilton, O., took 300 tons of northern iron from a producer in the Ironton district. A leading seller reports the sale of 2000 tons of charcoal iron to a melter in Michigan and 1000 tons of 8 to 9 per cent silvery iron to another consumer in that territory. Other sales include 1000 tons of southern iron to a Central Indiana consumer and 1500 tons of northern foundry iron to a Michigan melter. The most important inquiry before the trade is that of the Globe Stove & Range Co., Kokomo, Ind., for 1500 tons of northern iron.

### More Active in East

Philadelphia, Jan. 29.—Pig iron is more active than in some time. Three eastern consumers have bought a total of nearly 10,000 tons of basic. The market for this grade now is $22.25 to $22.75, delivered. More foundry iron has been sold in this district than for a long time. The foundry market is $22.50 to $23, base, eastern furnace. While some weakness has been displayed occasionally the past week, the outlook today seems somewhat firmer. At least 2000 tons of low phosphorus has been sold the past week. Copper bearing continues at $28, furnace. English copper free is $27.76, delivered, Philadelphia consuming points but the minimum on domestic copper free seems $29.79, delivered, Philadelphia. Virginia foundry iron continues at $25 to $25.50, furnace.

### More Sales Are Noted

St. Louis, Jan. 29.—Pig iron purchasing has assumed larger proportions. Most of the present activity, however, is confined to melters of foundry iron, relatively little interest being displayed by basic and malleable users. The largest single transaction reported was for 2000 tons of foundry iron for second quarter delivery, the business going to the St. Louis Coke & Iron Co. This same interest sold 1000 tons to an Indiana melter and small lots aggregating 500 tons. The representative of a Birmingham maker disposed of 4000 tons, including one lot of 1000 tons and three 500-ton lots. A Southern Illinois stove melter purchased 500 tons and 750 tons were taken by an Indianapolis interest. Inquiries now current from scattered sources total about 10,000 tons and include 1000 tons of malleable by an Illinois melter and 200 to 300 tons of foundry for export to China to be used in manufacturing castings for diesel engines. The Pittsburgh Plate Glass Co. is asking prices on 300 tons of foundry iron for use at its plant in Crystal City. Mo. Prices are strengthening and offerings and assortments are considerably less. No Southern iron is offered under $22.50, and most of the makers in that section are asking $23. Chicago is firm at $24. The leading local producer has advanced its quotation to $25.50 to $26, f.o.b. Granite City. Demand for prompt shipment continues and selling agencies are receiving numerous requests to expedite deliveries.

### Surplus Iron Being Sold

Birmingham, Ala., Jan. 29.—Another selling impetus is being felt in the pig iron market and the caution noted a week ago has become more pronounced even in second quarter selling. Regular customers have placed some spot business at $22.50 per ton, No. 2 foundry base. Melters of iron have been paying $23 for second quarter iron and two of the smaller companies already have announced that they are seeking little more business as they must protect regular customers. Surplus iron is being sold more liberally and the clearing of yards may come earlier than has been predicted. Active furnace interests are in no better position than last week when a scarcity of certain grades was noted. The demand for pig iron is general. Small-lot buyers are increasing their orders, 700-ton orders replacing 500 tons. Sanitary pipe interests are frequent purchasers and shipments are mounting.

# Prices Present and Past

**Representative market figures yesterday, and for last month, three months ago and one year ago**

| | Jan. 30, 1924 | Dec., 1923 | Oct., 1923 | Jan., 1923 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, valley del., Pitts. | $24.77 | 24.17 | 27.27 | 29.27 |
| Basic, valley | 22.00 | 20.50 | 23.75 | 25.90 |
| Basic, eastern del., eastern Pa. | 22.50 | 23.30 | 24.00 | 27.70 |
| *No. 2 foundry, del, Pitts. | 24.77 | 23.77 | 25.17 | 28.77 |
| *No. 2 foundry, Chicago. | 24.00 | 23.00 | 25.60 | 28.80 |
| *Southern No. 2, Birmingham | 22.50 | 20.75 | 20.20 | 23.30 |
| *Southern Ohio, No. 2. Ironton. | 24.00 | 22.50 | 23.90 | 27.90 |
| **No. 2X, Virginia furnace | 25.50 | 24.50 | 25.00 | 27.50 |
| **No. 2X, eastern del., Phila. | 24.26 | 24.26 | 24.51 | 29.56 |
| Malleable, valley | 22.50 | 21.50 | 23.25 | 27.25 |
| Malleable, Chicago | 24.00 | 23.00 | 25.60 | 28.80 |
| Lake Superior charcoal, Chicago | 29.04 | 28.80 | 30.05 | 33.15 |
| Gray forge, val. del. Pittsburgh | 24.77 | 23.27 | 24.52 | 27.77 |
| Ferromanganese, del., Pitts. | 112.29 | 113.79 | 112.79 | 109.79 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, bessemer, Pittsburgh. | 42.50 | 42.50 | 42.50 | 37.50 |
| Sheet bars, open-hearth, Pitts. | 42.50 | 42.50 | 42.50 | 37.50 |
| Billets, bessemer, Pittsburgh. | 40.00 | 40.35 | 41.50 | 37.50 |
| Billets, open-hearth, Pittsburgh. | 40.00 | 40.35 | 41.50 | 37.50 |
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.00 |
| Steel bars, Chicago | 2.50 | 2.50 | 2.50 | 2.08 |
| Steel bars, Philadelphia | 2.72 | 2.72 | 2.72 | 2.385 |

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

| | Jan. 30, 1924 | Dec., 1923 | Oct., 1923 | Jan., 1923 |
|---|---|---|---|---|
| **FINISHED MATERIAL (Continued)** | | | | |
| Iron bars, Philadelphia | $2.57 | 2.62 | 2.62 | 2.365 |
| Iron bars, Chicago mills | 2.40 | 2.40 | 2.40 | 2.35 |
| Beams, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.05 |
| Beams, Philadelphia | 2.72 | 2.72 | 2.72 | 2.385 |
| Beams, Chicago | 2.60 | 2.60 | 2.60 | 2.18 |
| Tank plates, Pittsburgh | 2.50 | 2.50 | 2.50 | 2.05 |
| Tank plates, Philadelphia | 2.72 | 2.72 | 2.72 | 2.385 |
| Tank plates, Chicago | 2.60 | 2.60 | 2.60 | 2.18 |
| Sheets, blk., No. 28, Pittsburgh. | 3.75 | 3.75 | 3.75 | 3.35 |
| Sheets, blue anl., No. 10, Pitts. | 2.90 | 2.95 | 3.00 | 2.50 |
| Sheets, galv., No. 28, Pittsburgh | 4.90 | 4.90 | 5.00 | 4.35 |
| Wire nails, Pittsburgh | 3.00 | 3.00 | 3.00 | 2.70 |
| **COKE** | | | | |
| Connellsville furnace | 4.00 | 3.85 | 3.85 | 8.25 |
| Connellsville foundry, ovens | 4.25 | 4.80 | 4.80 | 9.00 |
| **OLD MATERIAL** | | | | |
| Heavy melting steel, Pittsburgh. | 22.50 | 18.35 | 16.10 | 21.65 |
| Heavy melting steel, eastern Pa. | 20.00 | 16.80 | 15.50 | 19.70 |
| Heavy melting steel, Chicago | 18.25 | 16.50 | 14.50 | 18.70 |
| No. 1 wrought, eastern Pa. | 22.00 | 19.00 | 18.00 | 22.25 |
| No. 1 wrought, Chicago | 17.50 | 16.50 | 15.30 | 19.40 |
| Rails for rolling, Chicago | 20.00 | 17.30 | 16.25 | 20.55 |

## Composite Market Average

**Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products Yesterday, One Week, One Month, Three Months, One Year and Ten Years Ago.**

| Jan. 30, 1924 | Jan. 23, 1924 | Dec., 1923 | Oct., 1923 | Jan., 1923 | Jan., 1914 |
|---|---|---|---|---|---|
| $43.39 | $43.35 | $43.02 | $43.84 | $41.17 | $23.03 |

**Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wi re Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe**

# Iron and Steel Prices

SCRAP PRICES, PAGE 380, WAREHOUSE PAGE 376, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 382

## Pig Iron

Prices per gross ton

| | |
|---|---|
| Bessemer, valley | $23.00 to 23.50 |
| Bessemer, Pittsburgh | 24.77 to 25.27 |
| Basic, valley | 22.00 to 23.00 |
| Basic, Pittsburgh | 23.77 to 24.77 |
| Basic, Buffalo | 23.00 |
| Basic, del., eastern Pa. | 22.26 to 22.76 |
| Malleable, valley | 22.50 to 23.00 |
| Malleable, Pittsburgh | 24.27 to 24.77 |
| Malleable, Chicago | 24.00 to 24.50 |
| Malleable, Buffalo | 22.00 to 22.50 |
| Malleable, del., eastern Pa. | 24.00 to 25.00 |

**FOUNDRY IRON SILICONS**

| | |
|---|---|
| No. 2 Northern | 1.75 to 2.25 |
| No. 2 Southern foundry. | 1.75 to 2.25 |
| No. 2X East'n and Virginia | 2.25 to 2.75 |
| No. 1X Eastern | 2.75 to 3.25 |
| No. 1 Chicago | 2.25 to 2.75 |
| No. 2 foundry Eastern | 1.75 to 2.25 |

| | |
|---|---|
| No. 1X, eastern del., Phila. | 24.76 |
| No. 1X, Buffalo | 23.00 to 23.50 |
| No. 2 foundry, valley | 23.00 to 24.00 |
| No. 2 foundry, Pittsburgh | 24.77 to 25.77 |
| No. 2 foundry, Buffalo | 22.00 to 22.50 |
| No. 2 foundry, Chicago | 24.00 to 24.50 |
| No. 2 foundry, Granite City | 25.50 to 26.00 |
| No. 2 foundry, Ironton furnace | 24.00 |
| No. 2 foundry, Cleveland, del. | 24.50 |
| No. 2 foundry, del., Phila. | 23.76 |
| No. 2 foundry, N. J. tidewater | 24.13 |
| No. 2X, eastern del., Phila. | 24.26 |
| No. 2X, east, N. J. tidewater | 24.63 |
| No. 2X, eastern del., Boston | 26.65 to 27.15 |
| No. 2X foundry, Buffalo fur. | 22.50 to 23.00 |
| No. 2X, Buffalo, del. Boston. | 26.92 to 27.92 |
| No. 2 southern, Birmingham | 22.50t o 23.00 |
| No. 2 southern, Cincinnati | 26.05 to 27.05 |
| No. 2 southern, Chicago | 29.01 |
| No. 2 southern, Philadelphia | 29.80 to 30.80 |
| No. 2 southern, Cleveland | 28.01 to 29.01 |
| No. 2 southern, Boston (rail and water) | 29.41 to 29.91 |
| No. 2 southern, St. Louis | 27.17 to 28.17 |
| No. 2X, Virginia furnace | 25.00 to 25.50 |
| No. 2X, Virginia, Phila. | 29.77 to 30.27 |
| No. 2X, Virginia, Jersey City | 30.04 to 30.54 |
| No. 2X, Virginia, Boston | 30.92 to 31.42 |
| Gray forge, eastern Pa. | 22.00 |
| Gray forge, val. del., Pitts. | 24.77 |
| Low phos., standard, valley | 29.00 |
| Low phos., standard, Phila. | nominal |
| Low phos., Lebanon, furnace | 28.00 |
| Charcoal, Birmingham | 33.00 to 34.00 |
| Charcoal, Superior, Chicago | 29.04 |

**Silvery Iron**

Jackson County, Ohio, furnace

| | |
|---|---|
| 7 to 8 per cent | 31.00 |
| 8 to 9 per cent | 32.50 |
| 9 to 10 per cent | 34.50 |
| 10 to 11 per cent | 36.50 |
| 11 to 12 per cent | 39.00 |
| 12 per cent | 41.50 |

**Bessemer Ferrosilicon**

Jackson County, Ohio, furnace

| | |
|---|---|
| 10 to 11 per cent | 41.50 |
| 11 to 12 per cent | 44.00 |
| 12 to 13 per cent | 46.50 |

## Ferroalloys

| | |
|---|---|
| †Ferromanganese 78 to 82 per cent, tidewater, or furnace first hand and resale | 109.00 |
| Ferromanganese, delivered, Pittsburgh | 113.79 |
| Spiegeleisen 19 to 21 per cent furnace or tidewater | 38.00 to 40.00 |
| Ferrosilicon, 50 per cent contract freight allowed | 75.00 |
| Ferrotungsten standard, cents per pound contained | 85.00 to 95.00 |
| Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, cents per pound contained, delivered | 10.00 to 10.25 |
| Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis | $3.50 to $4.00 |
| Ferro carbon-titanium, carloads, producer's plant, per net ton | $200.00 |

†Duty paid.

## Coke

**Beehive, Ovens**

Prices per net ton

| | |
|---|---|
| Connellsville furnace | $3.75 to 4.25 |
| Connellsville foundry | 4.75 to 5.50 |
| New River foundry | 11.00 to 11.50 |
| Wise county furnace | 4.50 to 5.75 |
| Wise county foundry | 5.75 to 6.50 |
| Alabama furnace | 5.00 to 6.00 |
| Alabama foundry | 5.50 to 6.50 |

**By-Product**

| | |
|---|---|
| Foundry, Newark, N. J., del. | $10.91 |
| Foundry, Chicago, ovens | 12.50 |
| Foundry, Boston, delivered | 12.50 |
| Foundry, St. Louis | 12.50 |
| Foundry, Granite City, Ill. | 12.50 |
| Foundry, Alabama | 5.00 to 6.50 |

## Semifinished Material

Prices per gross ton

**BILLETS AND BLOOMS**

4 x 4-inch base

| | |
|---|---|
| Open-hearth, Pittsburgh | $40.00 |
| Open-hearth, Youngstown | 40.00 |
| Open-hearth, Philadelphia | 45.17 |
| Bessemer, Pittsburgh | 40.00 |
| Bessemer, Youngstown | 40.00 |
| Forging, Pittsburgh | 45.00 |
| Forging, Philadelphia | 50.17 |

**SHEET BARS**

| | |
|---|---|
| Open-hearth, Pittsburgh | $42.50 |
| Open-hearth, Youngstown | 42.50 |
| Bessemer, Pittsburgh | 42.50 |
| Bessemer, Youngstown | 42.50 |

**SLABS**

| | |
|---|---|
| Pittsburgh | $40.00 |
| Youngstown | 40.00 |

**WIRE RODS**

¼-inch and finer

| | |
|---|---|
| Wire rods, Pittsburgh | $51.00 |

Standard extras, $2.50 per ton over ¼-inch; $5 for screw stock; $15 for acid wire rods. Carbon extras, $3 for 0.20 to 0.40; $5 for 0.41 to 0.55; $7.50 for 0.56 to 0.75; $10 over 0.75.

**SKELP**

| | |
|---|---|
| Grooved skelp, Pittsburgh | 2.35c to 2.40c |
| Universal skelp, Pittsburgh | 2.35c to 2.40c |
| Sheared skelp, Pittsburgh | 2.35c to 2.40c |

## Shapes, Plates and Bars

Prices per pound

| | |
|---|---|
| Structural shapes, Pittsburgh | 2.50c |
| Structural shapes, Phila. | 2.62c to 2.82c |
| Structural shapes, New York | 2.64c to 2.84c |
| Structural shapes, Chicago | 2.60c |
| Tank plates, Pittsburgh | 2.50c |
| Tank plates, Philadelphia | 2.62c to 2.82c |
| Tank plates, New York | 2.64c to 2.84c |
| Tank plates, Chicago | 2.60c |
| Bars, soft steel, Pittsburgh | 2.40c |
| Bars for cold finishing, Pitts. | 2.55c |
| Bars, soft steel, Philadelphia | 2.72c |
| Bars, soft steel, New York | 2.74c |
| Bars, soft steel, Chicago | 2.50c |
| Bars, refined iron, Pittsburgh | 3.25c to 5.00c |
| Bars, rail steel, Chicago | 2.30c to 2.33c |
| Bars, rail steel, mill | 2.10c to 2.20c |
| Reinforcing bars, billet, Pitts. | 2.40c |
| Bar iron, common, Phila. | 2.57c to 2.62c |
| Bar iron, common, New York | 2.59c to 2.64c |
| Bar iron, common, Chicago | 2.40c |
| Bars, forging quality, Pitts. | 2.65c |

## Hoops, Bands, Shafting

Prices per pound

| | |
|---|---|
| Hoops, Pittsburgh, under 5 in. | 3.00c |
| Hoops, Pittsburgh, 20 gage, under 1 in. | 3.35c to 3.50c |
| Bands, Pittsburgh | 3.00c |
| Cold finished steel bars, Pittsburgh base | 3.00c |
| Steel shafting, Pittsburgh | 3.00c |
| Cotton ties, bundle 45 lb. Pittsburgh | $1.67 |

## Rails, Track Material

| | |
|---|---|
| Standard bessemer rails, mill | $43.00 |
| Standard open-hearth rails, mill | 43.00 |
| Relaying rails, St. Louis | 27.00 to 32.50 |
| Relaying rails, Pittsburgh | 30.00 to 34.00 |
| Light rails, 25 to 45, mill | 2.15c to 2.25c |
| Angle bars, Chicago base | 2.75c |
| Spikes, railroad, Pittsburgh | 3.05c to 3.15c |
| Spikes, small railroad, Pitts. | 3.40c to 3.50c |
| Spikes, boat and barge, Pitts. | 3.50c |
| Spikes, railroad, Chicago | 3.10c |
| Track bolts, Pitts. Standard. | 4.00c |
| Track bolts, Pitts., small | 4.75c to 5.00c |
| Track bolts, Chicago | 4.10c |
| Tie plates, Pittsburgh | 2.55c to 2.60c |
| Tie plates, Chicago | 2.60c |

Spike, tie plate and truck bolt prices for carlots.

## Wire Products

To Jobbers in Carloads

Prices per pound

| | |
|---|---|
| Wire nails, Pittsburgh | 3.00c |
| Galv'd nails, 1-inch and over | 5.25c |
| Plain wire, Pittsburgh | 2.75c |
| Annealed wire, Pittsburgh | 2.90c |
| Galvanized wire, No. 9 gage, Pittsburgh | 3.35c |
| Barbed wire, painted, Pitts. | 3.45c |
| Barbed wire, galv., Pitts. | 3.80c |
| Polished staples, Pittsburgh | 3.45c |
| Galvanized staples, Pittsburgh | 3.80c |
| Coated nails, count keg, Pittsburgh | 2.70c |
| Woven wire fencing (retailers) | 65 off |
| Woven wire fencing (jobbers) | 67½ off |

## Chain, Piling, Strip Steel

Prices per pound

| | |
|---|---|
| Chain, 1-in. proof coil, Pitts. | 6.00c |
| Sheet piling base, Pittsburgh | 2.55c |
| Hot rolled strip steel, Pittsburg stamping quality | 3.00c |
| Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, 0.100-inch and heavier, base | 5.00c |

## Sheets

**SHEET MILL BLACK**

Prices per pound

| | |
|---|---|
| No. 28, open-hearth, Pitts. | 3.75c to 3.85c |
| No. 28, bessemer, Pitts. | 3.75c to 3.85c |
| No. 28, open-hearth, Phila. | 4.02c to 4.17c |
| No. 28, open-hearth, Chicago. | 4.09c to 4.19c |

**TIN MILL, BLACK**

| | |
|---|---|
| No. 28, open-hearth, Pitts. | 3.75c to 3.85c |

**GALVANIZED**

| | |
|---|---|
| No. 28, open-hearth, Pitts. | 4.90c to 5.00c |
| No. 28 bessemer, Pittsburgh | 4.90c to 5.00c |
| No. 28, open-hearth, Phila. | 5.22c to 5.32c |
| No. 28, open-hearth, Chicago. | 5.19c to 5.34c |

**BLUE ANNEALED**

| | |
|---|---|
| No. 10, open hearth, Pitts. | 2.90c to 3.00c |
| No. 10 bessemer, Pittsburgh | 2.90c to 3.00c |
| No. 10, open-hearth, Phila. | 3.32c |
| No. 10, open-hearth, Chicago. | 3.34c |

**AUTOMOBILE SHEETS**

| | |
|---|---|
| No. 22 Pittsburgh | 5.35c |

## Tin Plate

Prices per 100-pound box

| | |
|---|---|
| Tin plate, coke base, Pitts. | $5.50 |

## Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

| | Black | Galv. |
|---|---|---|
| 1 to 3-inch, butt steel | 62 | 50½ |
| 1 to 1½-inch, butt iron | 30 | 13 |

## Boiler Tubes

Less Carload Discounts—Carloads 4 Points Additional

| | |
|---|---|
| Steel 3¼ to 3¾-inch | 38½ |
| Charcoal iron, 3¼ to 4½-inch | 5 |
| Seamless hot rolled, 3½ to 3¾-inch | 35 |

## Cast Iron Water Pipe

Prices per net ton

Class B Pipe

| | |
|---|---|
| Four-inch, Chicago | $61.20 to 62.20 |
| Six-inch and over, Chicago | 57.20 to 58.20 |
| Four-inch, Birmingham | 51.00 to 52.00 |
| Six-inch and over, Birmingham | 47.00 to 48.00 |
| Four-inch, New York | 65.60 to 66.60 |
| Six-inch and over, New York | 60.60 to 61.60 |

Standard fittings, Birmingham, base, $110.00 6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $5 higher than Class B.

# Scrap Moving Actively

## Prices Generally Higher and Consumers Taking Better Tonnages—Steelmakers in East Cover Heavy Needs at Advanced Quotation

SCRAP PRICES, PAGE 380

Chicago, Jan. 29.—Iron and steel scrap has toned down slightly in sympathy with softness to the east and because melters continue aloof. Activity is not sufficient to mark down quotations but there is an absence of the firmness which characterized the market a week ago. Heavy melting steel which dealers were holding at about $19 a week ago now can be had at 50 to 75 cents less. Borings are stronger and in demand at blast furnaces. The American Steel Foundries is reported to have bought cut tires, knuckles and couplers. Inland Steel Co. has not yet bought and this is a factor in the weakness. The Pennsylvania railroad, northwestern region, is offering 7500 tons and the southwestern region 3100 tons. The Burlington railroad is offering 4650 tons and the Chicago & Alton railroad 1000 tons.

### Steel Scrap Lower

Boston, Jan. 29.—Trading in iron and steel scrap continues active but heavy melting steel prices are lower. Pipe is still being bought against old orders and is firm at $13.25 on cars shipping point. Blast furnace borings and turnings are in fair demand at $11 to $11.50. The cast grades stiffened slightly during the week with No. 1 machinery reaching $23.50, delivered, in a few cases. Malleable scrap is scarce, offered at $22, delivered. A Bridgeport, Conn., consumer is bidding $16 delivered for heavy melting steel.

### Better Prices in East

New York, Jan. 29.—Iron and steel scrap prices have taken a sharp advance, few grades not being affected. Particular strength is noted in No. 1 heavy melting steel and No. 1 railroad steel, both reacting sharply after the setback they received a week or 10 days ago. Dealers are now paying $15.50 to $16, New York, for heavy melting steel, and $15.75 to $16.25 for railroad steel, and are getting $18.50 delivered, Bethlehem and $19, delivered Pottsville, Pa., on this latter grade. The unusually high prices paid for the 53,000 tons of government scrap sold recently at Philadelphia are having an indirect bearing as they have given more confidence to dealers.

Borings and turnings are going in substantial quantities to Harrisburg, Pa., and Phoenixville, Pa., at $16, delivered, while mixed borings and turnings are moving in round tonnages to Bethlehem and Weirton, Pa.

### Buffalo Market Firm

Buffalo, Jan. 29.—During the past week approximately 15,000 tons of heavy melting steel were sold for shipment to Buffalo and out of town consumers. One Buffalo mill bought a large portion of this at $20.50 to $21. Practically all the mills are buying, and the market is firm. Dealers are paying $20.50 and $21 to cover orders. Sales of malleable, car wheels and the specialties are brisk. A small tonnage of car wheels brought $21, Buffalo. A local mill paid $17 for 1600 tons of compressed sheets and flashings earlier last week, but the market has stiffened since then.

### Pittsburgh Market Dull

Pittsburgh, Jan. 29.—Strength of scrap is shown by the fact that after two weeks dullness, prices have shown no tendency to slip back to levels prevailing late last year. Heavy melting steel continues quotable at $22.50 to $23. Some cast grades are weak, due to a lack of activity among foundries. This applies particularly to No. 1 cupola cast which is down 50 cents per ton, at $21 to $21.50. Buyers are waiting for weakness, but shortage of suitable scrap, and increased consumption, although in some cases a larger percentage of pig iron is being charged in open hearth practice, is having the effect of sustaining the market at levels reached by sales made a few weeks ago. In connection with specialties, no purchasers are willing to pay more than $23.50 to $24. One sale of angle bars was recorded at $24 but another sale of high class specialties was made to a Vandergrift, Pa., consumer, involving 2000 tons, at $25. Railroad lists are small. The Pennnsylvania railroad will close bids Feb. 6 on 15,000 tons.

### Cleveland Market Strong

Cleveland, Jan. 29.—Strength of iron and steel scrap continues. This in large

(*Concluded on page* 333.)

# Semifinished Mills Busy

## Schedules Afford Little Opportunity for New Tonnage, Although Rollers' Needs Mostly Covered—Prices of Sheet Bars Firm at $42.50 Pittsburgh

SEMIFINISHED STEEL PRICES, PAGE 321

Pittsburgh, Jan. 29.—Semifinished steel makers are having no difficulty in obtaining specifications. Actual consumption is exceeding tonnages anticipated and one order for sheet bars recently reported as 8000 tons has since increased to 15,000 tons. A Canonsburg, Pa., tin plate producer is reported to have closed on several thousand tons this week, but so far as can be learned, was unable to reduce the $42.50 level. The American Sheet & Tin Plate Co. is not now in the market nor has it been a purchaser during this year, and although it was reported to have bought 50,000 to 200,000 tons for delivery in the first quarter, states it has made no purchases for that delivery. Billet and slab inquiries are scarce, most users' needs having been met. Deliveries are more difficult to secure, and some deliveries due Jan. 15 have not as yet been made. The present price on sheet bars is unchanged at $42.50, Pittsburgh or Youngstown, although one or two buyers nearby Pittsburgh are understood to have closed at around that price delivered their plants. The 4 x 4-inch billets and slabs still are quoted at $40, Pittsburgh or Youngstown, and while small billets usually are quoted at $42.50, some users were able to buy from certain producers which waived the $2.50 differential. Several inquiries now are current for several hundred tons each of small billets from 1¾-inch up to 3-inch; one current calls for 2000 tons of 1¾-inch bessemer billets, all from nearby users. Forging billets are unchanged at $45, Pittsburgh. Wire rods at $51 have enjoyed a ready sale, some rivet makers having covered their wants for some time to come. Only a fair demand is noted for skelp which is quoted at 2.35c to 2.40c.

### Little Tonnage Moving

New York, Jan. 29.—Business in semifinished material in this district has been of a hand-to-mouth character and comparatively little tonnage has been involved. On wire rods the market is firm at $51 base Pittsburgh. In some instances special prices have been made on billets, but these figures have not been a market factor and the price continues to be quoted at $40 base Pittsburgh for open hearth rerollers and at $45 for forging billets.

### Books Are Crowded

Youngstown, O., Jan. 29.—Distribution of semifinished commodities by producers in this district is on a substantial basis with the bulk of the tonnage in the form of sheet bars. The tonnage of sheet bars under contract for first quarter delivery in addition to intermill requirements for raw steel, has forced one producer to close his books and unless some unforseen condition arises no inquiry for either sheet bars, billets or slabs can be entertained during the next two months. The remaining producers, while not entirely out of the market, have tight schedules. Where two or three weeks leeway is permitted, odd lots of sheet bars not exceeding 1000 tons might be considered although no effort is being made to write additional business on order books. Quotations are firm at $42.50, Youngstown or Pittsburgh.

### Eastern Demand Light

Philadelphia, Jan. 29.—The irregularity apparent in some billet prices recently does not seem to have been widespread and now has disappeared. Several lots of rerolling billets were placed during the past week at $40, base Pittsburgh, while forging billets went at $45, Pittsburgh. These prices appear to be the minimum.

# More Strip Being Bought

STRIP PRICES, PAGE 321

Pittsburgh, Jan. 29.—Hot and cold rolled strip steel consumption is on the increase, indicated by the way specifications are coming in. Producers are well committed for first quarter and some customers already show anxiety to place business for second quarter. Because of the coal strike possibility

April 1 there is desire to sidestep such business for the present and books have not been opened for second quarter. Prices on tonnage for first quarter are unchanged at 3.00c, base Pittsburgh, for hot and 5.00c base Pittsburgh for cold-rolled.

## Ferro Orders

### Bring Market Activity—English Ferro-Manganese $109 Seaboard

FERROALLOY PRICES, PAGE 321

Pittsburgh, Jan. 29.—Ferromanganese orders totalling 2500 to 3000 tons for several users for domestic and imported material have created fair activity for the past week in the ferroalloys market. These orders, involving from a single carload to 1000 tons at a time, were taken at $109 Baltimore base, and British material sold brought $109 to $110, c.i.f. Atlantic seaboard base, duty paid. On Jan. 26 the price on English material went back to the $107.50, seaboard level maintained up to several weeks ago, so that now the market is quoted at $107.50 to $109, seaboard. One or two inquiries are out for single carloads or 75 tons, one of which may develop into 200 or 250 tons. Most users are well covered, some fairly well over the second quarter, and one or two middle interests have experienced difficulty in covering to fill small orders. Since majority of consumers desire increased shipments on orders, consumption appears on the increase, thus reducing the possibility of resale ferromanganese being available. Spiegeleisen is quiet, no outstanding sales being noted and no large inquiries being circulated. Prices are unchanged at $38 for the 19 to 21 per cent material in quantities. Several sales of high grade ferrovanadium for tool steel have been recorded in the past several days involving 1000 to 2500 pounds or so at a time, the usual figures being $3.75 to $4. Material at $3.50 is understood to be of a lower grade. Ferrotungsten promises to grow stronger in face of increased demand. Last sales of high grade material recorded a week or 10 days ago were on the basis of 90c. Some sellers now are maintaining a 95c minimum quotation. Low grade material is being sold at 85c or 87½c.

#### English Price Reduced

New York, Jan. 29.—Importers of English ferromanganese have reduced their price $1.00 and the new figure is $109, duty paid tidewater. This is the price that the domestic makers have been quoting for some time. It is understood that the $109 price probably would be shaded by importers, if necessary.

Sales of about 1000 tons of spiegeleisen have been made during the past week. Most of this business was entered at $39, furnace, for 20 per cent metal. The full market range is $38 to $40. Some English spiegeleisen has been offered during the past week at $36, duty paid New Orleans, but it is understood the tonnage involved is not sufficiently large to affect the market.

Buying of special alloys by the tool steel trade has continued rather slack, while most of the 1924 contracts for materials for the general alloy steel trade has been closed up. In consequence, the markets are rather quiet and prices are unchanged.

# Coke Activity Is Limited

### Foundry Requirements Appear To Be Well Covered—Medium Sulphur Grade Sold in Small Lots—Domestic Coke in Demand

COKE PRICES, PAGE 321

Pittsburgh, Jan. 29.—Negotiations under way for second-quarter coke are eliciting few quotations although certain producers believe the expected coal strike will not measurably affect the Connellsville region. These appear willing to quote $4.25; others are quoting $4.40 and $4.50, while a third group will not quote. One Youngstown district blast furnace operator is reported to have closed with an affiliated interest at $4.40 for second quarter delivery. The Shenango Furnace Co., Struthers Furnace Co., M. A. Hanna Co., and others, also are obtaining figures on fuel for that period. The Shenango company may also buy for February and March for one furnace soon to go into blast. Rogers Brown & Co. bought 10,000 tons for February shipment. The contract market is quoted at $4 to $4.25, while the spot market is weak at $4. Some standard coke is selling as low as $3.65 and $3.75, ovens, for from 10 to 25 carloads at a time. Medium sulphur coke is selling at $3.25 to $3.50, the demand being confined to small lots. Limited activity in foundry coke is noted, several small lot sales at $4.75 to $5.50 being recorded. Certain brands still are bringing $6 to $6.50, but most foundries covered by contracts are receiving shipments regularly. The production of Connellsville coke for the week ended Jan. 19 as reported by the *Connellsville Courier* was estimated to be 204,510 tons, as compared with 192,050 tons the preceding week.

#### Higher Prices Are Prevailing

New York, Jan. 29.—Somewhat higher prices are prevailing on coke. The market on standard foundry fuel for spot or nearby shipment is $5 to $5.50, but special brands are bringing $6.50 and in some cases higher. Medium sulphur coke which was quoted at $3.25, Connellsville, a week ago now is quoted at $3.50. Altogether, demand for coke is somewhat better and included in the past week's business have been a number of second quarter contracts which went at $5.75, Connellsville. The market on standard by-product foundry coke continues $10.91, delivered Newark, and other northern New Jersey points.

#### Foundry Coke in Demand

Chicago, Jan. 29.—Increased foundry melt is causing good demand for coke and the outlook is for continued increased buying by these users. The market is still steady at $12.50 Chicago ovens.

#### Sales Are Scattered

Cincinnati, Jan. 29.—Coke sales are confined chiefly to scattering lots for immediate shipment. The largest recent transaction involves 20 cars of domestic coke for delivery through February and March. Keen competition continues and prices are being shaded in some instances. By-product ovens are pressing their product for sale and makers in adjacent fields also are showing some anxiety to dispose of tonnage. Spot foundry coke is in fair demand. Special brands of Connellsville foundry coke still are bringing $5.50 to $6.50 ovens, while Wise county foundry coke is quoted at $5.75 to $6.50 ovens. Sales of New River foundry coke are improving, while Pocahontas coke is not a factor in the local situation. Demand for furnace coke is still lacking in all grades.

#### Requirements Are Well Covered

St. Louis, Jan. 29.—Users of metallurigcal coke for the most part have filled their requirements for the first half, and contracting by many melters has covered them through the rest of 1924. As a result, the coke situation is featureless, except as it has been affected in the domestic department by the recent cold weather. The movement of household coke during the past three weeks was larger than during the preceding two months, and dealers stocks have been reduced substantially. This aid afforded by the drop in temperatures, however, is light as compared with the massive stocks in by-product manufacturers yards. Six weeks or two months of the activity of the past two weeks will be required to bring these accumulations down to seasonal size. Prices on all grades and varieties remain unchanged.

#### Little Change in South

Birmingham, Jan. 29.—The coke market shows little change, and prices remain the same. By-product foundry coke ranges from $5 to $6.50 per ton. The production has not been increased much lately though the furnace interests are requiring more of the product. No statement has been made yet as to the effect of by-product gas replacing coke as fuel in this district. Three plants are operating steadily on gas now and another is to be using it within another week or two. Small lot orders of coke are being filled promptly, the railroads co-operating in handling the business.

## Foundry Workers Receive Wage Increases

St. Louis, Jan. 29.—A wage increase approximating 10 per cent has been granted to 2000 foundry employes, following a series of conferences under direction of the Belleville Manufacturers association. The final conference was held Saturday in regard to the wage increase of foundry workers known as "shakers out." The average increase of the various divisions of foundry employes as a result of the new agreement follows: Molders, $7 per day to $7.50; polishers, $6 to $6.75; stove mounters, $5.50 to $5.75; shakers out, $5 to $5.25; and laborers, 56c to 57c per hour. With the exception of the stove mounters the wage increases will date from Jan. 1. The present contract of the stove mounters does not expire until June 30.

# Bar Demand Is Broader

**Deliveries Slowing at Chicago Where Bookings Exceed Shipments—Eastern Demand Given Impetus by Greater Specification—Prices Steady**

BAR PRICES, PAGE 321

Pittsburgh, Jan. 29.—Broadening demand is noted in steel bars. Many jobbers are ordering in small lots, single carloads or a few hundred tons, but larger users are placing orders and cold drawn steel bar users are manifesting concern about deliveries. The greatest improvement in the market is noted in this department. In Decmeber almost any size and kind of bar could be delivered shortly after receipt of order. The best deliveries now are three or four weeks. While some buying may be inspired by fear of a coal strike, a great deal is for actual consumption. Since the first of the year the inflow of orders has been so great that bar mills are increasing operation.

Improvement in refined iron bars is more marked, additional orders being placed in increasing volume. Prices are firm at 3.25c to 5.00c, base Pittsburgh. Railroad orders have increased and other industries are represented among buyers.

### New England Bars Active

Boston, Jan. 29.—Demand for bars from manufacturers throughout New England continues strong. Sales for January have been above the average for 1923 and in the case of one seller have been almost equal to the high month of 1923. The price is firm at 2.40c.

### Little Contracting Being Done

New York, Jan. 29.—Some contracting has featured the steel bar market here during the past week. Consumers continue to buy largely on a hand-to-mouth basis. On the general run of business, the price on steel bars continues firm at 2.40c, base Pittsburgh. On iron bars the market continues 2.25c to 2.30c, base Pittsburgh.

### Orders Exceed Shipments

Cleveland, Jan. 29.—Additional orders placed for bars have increased the backlogs on mill books so that the present time deliveries range from a few weeks for certain sizes and shapes up to from four to six weeks for the products in greatest demand. The purchases of steel by automobile builders, which in many cases have been considered of a seasonable character, now seem to be on a continuous basis. It is stated that recent heavy buying by parts manufacturers covered needs for a limited time and that therefore these interests may be expected to come into the market at frequent intervals. A feature of the bar market is the unusually heavy demand for automobile spring steel caused by the unusual popularity of bumpers and the decision of a number of automobile manufacturers to use longer springs. Prices for steel bars are well maintained at 2.40c, Pittsburgh.

### Heavy Buying at Chicago

Chicago, Jan. 29.—The leading interest's business in soft steel bars last week was sufficient to maintain 100 per cent increase over the same period of December. In fact, this maker's schedules have reached the place where delivery has slowed up. Bar making continued long. Some automobile accessory producers have specified more bars for February delivery than in any month in their history. Foreign buying of agricultural implements compels implement interests to request expedited shipments. Freight cars now before Chicago car-building interests call for 50,000 tons of bars, plates and shapes. Makers of bars find price is not stressed, and soft steel bars are quoted at 2.50c, Chicago.

New business is coming to rail steel barmakers in good volume and most mills now have a comfortable backlog. One interest has sufficient business to warrant double turn operations but prefers spreading it out. The rail steel bar price is 2.30c, mill, or 2.30c to 2.33c, Chicago.

Bar iron evidences the same lack of life that has characterized it for many weeks. A single turn is the best the mills can do. The quotation is unchanged at 2.40c, Chicago.

### January Business Large

Philadelphia, Jan. 29.—Steel bar business momentarily is les sactive but altogether the January sales in this territory are more than double those of December. Indications here are that bar mills of the country now are running about 80 per cent on the average or better. Steel bar price remains firm at 2.40c, Pittsburgh.

### Cold Drawn Orders Heavy

Pittsburgh, Jan. 29.—Assurance of good business in cold drawn steel bars for first quarter is based on present orders. Large tonnages and specifications are being received from large consumers, the automotive group, involving 1000 to 1300 tons of assorted sizes at a time. Machine tool builders are showing a disposition to buy after a quiet period. Agricultural implement interests are not buying but other consuming lines are fairly active. Some cold drawn steel bar manufacturers are specifying several hundred tons more than their contracts call for in January and some are manifesting anxiety over deliveries. The price is firm at 3.00c, base Pittsburgh, and many consumers would contract ahead at that level if manufacturers would permit. Only contracts from regular customers of long-standing are being accepted.

## Bolt, Nut, Rivet Orders Are Heavy

NUT AND BOLT PRICES, PAGE 382

Pittsburgh, Jan. 29.—Nut, bolt and rivet makers are fairly well obligated for first quarter and have been receiving attractive specifications from jobbers and large users as railroads. Several additional orders were placed last week for single carloads with many for less-than-carloads. The aggregate tonnage each week is heavy. Prices are unchanged as regards nuts and bolts and there is a growing disposition to maintain 2.90c base Pittsburgh on rivets. Occasionally a maker of the latter product is found willing to concede 15 cents on an atractive order.

### Five Per Cent Rise Near

Chicago, Jan. 29.—Although bolt and nut prices still are based on 60 and 10 off for large machine bolts, most selling interests here are quoting 60 and 5 off on small or undesirable business. It seems probable that 60 and 5 off will shortly become the general base. Specifications from implement and automobile manufacturers continue good. Most makers have comfortable order books.

## Trading from Warehouses Still Is Moderate

WAREHOUSE PRICES, PAGE 376

Detroit, Jan. 29.—Trade with iron and steel jobbers is showing improvement. Orders for bars, light structural shapes and galvanized sheets are in good demand. Bands and plates are not moving as fast as they were a month ago. Individual tonnages are small but the number of orders received makes a liberal volume. Common chain prices have been reduced, the light grades being marked down 75 cents per 100 pounds while 9/16 and larger are off 50 cents per 100 pounds.

### Trading Well Maintained

New York, Jan. 29.—Warehouse trading is well maintained, with prices strong but steady. The expected advance in galvanized sheets by one or two leading interests appears not far off. Shapes and reinforcing bars continue in particular demand.

### January Total Higher

Cleveland, Jan. 29.—January trading in iron and steel products from warehouses will total a larger volume of business than transacted either in November or December. Orders are coming in better now than in the first part of the month and prices on most materials, have stiffened. Some shading still is being done on building supplies with occasional shading of all materials on attractive tonnages. Most dealers are confident the first quarter will show considerable increase of business.

### Prices Again Shaded

Chicago, Jan. 29.—Chicago warehouses have reduced lead-coated terne plate $7 a ton, to 6.65c. Chain also has been reduced. The base formerly was 7.85c. The new price for 9/16 inch and larger is 7.35c and for ½ inch and smaller 7.10c.

## New Hoop Orders Slim

HOOP PRICES, PAGE 321

Pittsburgh, Jan. 29.—Hoop and band buyers are not furnishing many large orders, as those who are active are receiving shipments on contracts to care for current needs. Some automobile parts makers will order more soon as consumption is heaviest with them. Hoops are unchanged at 3.00c base Pittsburgh, although some attractive orders are understood to have been taken at $2 per ton, lower one or two makers

having gone to 2.90c base Pittsburgh, on some fairly large tonnages.

## Consumption of Iron Ore Increased in December

Cleveland, Jan. 29.—Lake Superior iron ore consumed by furnaces in December increased 27,365 tons over November, consumption in the last month of the year amounting to 4,478,842 tons. This compares with 4,845,196 tons in December, 1922. The total amount of ore on hand at furnaces and Lake Erie docks Jan. 1 was 38,635,619 tons, as against 39,866,049 tons one year prior. The Lake Superior Iron Ore association gives the following tabulation:

| | Tons |
|---|---|
| Ore consumed in November | 4,441,477 |
| Ore consumed in December | 4,478,842 |
| Increase in December | 27,365 |
| Ore consumed in December, 1922 | 4,845,196 |
| Ore at furnaces Jan. 1, 1924 | 30,653,619 |
| Ore on Lake Erie docks Jan. 1, 1924 | 7,981,432 |
| Total at furnaces and docks Jan. 1, 1924 | 38,635,051 |
| Total at furnaces and docks Jan. 1, 1923 | 39,866,049 |

## Carnegie Steel Co. Blows in Two Furnaces

Pittsburgh, Jan. 29.—Carnegie Steel Co. recently added two blast furnaces to its active list to give it 45 out of 59 in blast. One more is scheduled to go on at Isabella shortly and the two Lucy stacks have been ordered on but these will not be blowing for about 10 days. By that time one of the Isabella stacks will be down for lining repairs. The National Tube Co. has one of its 11 furnaces out for repairs to the lining but as soon as completed it will again be blown in. As regards steelmaking, the Carnegie Steel Co. maintains an average operation of between 88 and 90 per cent, which also is the average operation in some of its rolling departments.

## Revision To Be Expected

Washington, Jan. 29.—Resolutions providing for an investigation of the federal tariff commission by congress are among the epidemic of probes being instigated by both houses of congress, committees of which are undertaking the largest number of concurrent investigations in the history of the country. The tariff commission resolutions were introduced by Congressman Anthony Griffin, of New York, and Senator Robert M. LaFollette, of Wisconsin, in the house and senate, respectively.

The tariff commission is conducting a number of investigations concerning commodities to come under the flexible provisions of the tariff act by which applications already have been made or may be made for the raising or lowering of schedules by 50 per cent or less. About 200 applications are pending before the commission for the consideration of tariff schedules.

Among these applications is the one for the investigation of the costs of pig iron production in this country and abroad. Business interests of the country, it is said, may reasonably expect no action for adjustment of tariff schedules within the near future.

# Plate Tonnage Moderate

### Car, Locomotive, Tank and Pipe Work Brings Forth Fair Volume of Orders—2.50c Price Firmer but Shading Is Done

PLATE PRICES, PAGE 321

New York, Jan. 29.—The Standard Oil Co. of New York has distributed orders for tanks involving a total of 4500 tons with the Warren City Tank & Boiler Works and the Petroleum Iron Works Co. The Peter F. Connolly Co., Cleveland, is low bidder on the Staten Island pipe line, for which bids were opened last week by the New York board of water supply. The Connolly Company's bid covered riveted pipe and the work will require about 3000 tons of 7/16-inch plate. Walsh & Weidner, Chattanooga, Tenn., have booked a penstock to be built at Rock Island, Tenn., involving about 150 tons. Additional penstock work of size is expected to come out shortly. Some additional car plate, shape and bar business has been placed by car builders during the past week. The volume of business generally, is somewhat better but there continues a disposition among buyers here to postpone action and to buy largely on a hand-to-mouth basis. The jobbers have placed somewhat larger orders recently to replenish their dwindling stocks. Prices are a little firmer in some directions but, while the usual market is 2.40c to 2.50c, base Pittsburgh, it continues possible to place attractive tonnages at 2.35c and even at 2.30c.

#### Delivery Situation Easy

Pittsburgh, Jan. 29.—Plate deliveries still can be had almost as specified whereas in the other lines of heavy rolled products deliveries are tightening up considerably. Plate departments are operating on an 80 to 90 per cent basis, which is somewhat higher than on bars and shapes, which possibly is an explanation of the condition, but it too is indicative of good day-to-day trading. Some buyers of large plates under contract are furnishing specifications with a fair degree of regularity and this character of buying has increased greatly since the first of the year. Nothing new in the way of prospective oil tank business is coming out although several gas holders in addition to those reported in the Jan. 24 issue of IRON TRADE REVIEW, involving approximately 7500 tons of plates, are scheduled for early closing. An inquiry is about to be issued for a number of barges at Florence, Ala., which will involve a fair sized tonnage of heavy plates. This commodity continues to be quoted firmly at 2.50c, base Pittsburgh.

#### Pending Projects Require Plates

Cleveland, Jan. 29.—Small orders, which continue to be received in encouraging volume, and a number of projects that may develop into large bookings hold the interest of producers and sellers of plates in this district. The price of 2.50c, Pittsburgh, is more firmly maintained than in recent weeks, although lower figures continue to be quoted in some instances. The requirements of plates for car and locomotive building have received attention in this market. The total tonnage booked thus far in January exceeds that for the corresponding period of December by a comfortable margin. The outcome of inquiries for 6000 tons of plates for the New York Central's 100 locomotives and for 3000 and 3500 tons respectively for two eastern water line projects, previously mentioned in these columns, is awaited with interest.

#### Relying on Car Business

Chicago, Jan. 29.—Placement of railroad freight cars continues the mainstay of the plate market here. Local car builders now are figuring on equipment orders requiring about 50,000 tons of plates, shapes and bars. Orders for plates are being entered in fair volume from a widespread area of consumers, but in the past week have been outstripped by new bar business. At present no outstanding tank requirements are out. The plate price still is 2.60c, Chicago.

#### Buying Tendency Increases

Philadelphia, Jan. 29.—Pennsylvania railroad has released an inquiry for fully 5000 tons of plates. Some other railroad buying is coming into the market. Miscellaneous business is showing a tendency to increase somewhat. Plate operations from a tonnage standpoint are now from 40 to 50 per cent of capacity in the East. On most eastern business 2.40c, Pittsburgh, is quoted, with 2.35c, and in some cases 2.30c, Pittsburgh being quoted on attractive tonnages.

## Construction To Start on New Strip Mill

Ground will be broken as soon as the weather permits for the main building of the Blair Strip Steel Co., New Castle, Pa. Contracts were let last week to Smith & Bauman, local contractors, for a 75x250 foot brick structure to be erected on the company's 5-acre site on the eastern outskirts of the city. The building will have a concrete foundation and be enclosed with steel sash and wire glass. A 25 x 50-foot leanto will house the pickling equipment. Contracts recently were closed for electrically driven cold mills which will be arranged in tandem so that the various stands can be operated either singly or in groups of two or more mills. The company at the outset will roll narrow and medium widths specializing on deep drawing stock, material with special edges and cold strip of special analysis and of a high finish. Officers of the company include George D. Blair, president; George D. Blair Jr., vice president and treasurer; and Thursman C. Post, secretary. Offices are maintained at 502-3 Lawrence Savings & Trust building, New Castle, Pa.

A petition in bankruptcy has been filed against the Fowler Bottling Machine Co., 124-132 White street, New York; liabilities being given at about $7000 and assets about $4000.

# Concrete Market Duller

## Heavy Inquiries for Spring Building Find Prices Soft in Many Places —Few Contracts of Large Tonnages Being Closed

REINFORCING BAR PRICES, PAGE 321

Pittsburgh, Jan. 29.—Road work features the current week's reinforcing concrete bar market. Two fair sized tonnages were awarded the Concrete Steel Co., which also figured successfully in a number of small industrial jobs, the latter involving a total of 100 tons. Ordinarily concrete road construction takes about 45 tons of bars per mile, and with the extensive road building programs before the state being brought to conclusion in 1924, the concrete bar makers will doubtless enjoy heavy tonnage business for this purpose. The Jack's Run bridge near Pittsburgh involving 260 tons has been awarded Jones & Laughlin Steel Corp. The Clairton, Pa., high school is being refigured and will require 50 tons of bars and 200 tons of bar joists. The building for the Mine Safety Appliance Co., 120 tons, is being figured for the second time; bids closed Jan. 25. The Fairmont, W. Va., waterworks will take 100 tons and is to close soon. The price is unchanged at 2.40c, base Pittsburgh.

### Dullness Again Prevails

Cleveland, Jan. 29.—Dullness again prevails in the local reinforcing concrete bar market as few awards are being made. Inquiries are more numerous but few involve large tonnages. Large building programs are being launched by southern Ohio and northern Kentucky cities. Prices on stock material hold firm at 2.75c, base Pittsburgh. On new steel bars from mill 2.30c to 2.40c, Pittsburgh, is being quoted, with no tonnages of sufficient size being placed to test the market's strength. Little business was done by rerolled bar dealers during the week quotations on which were about 2.10c, mill.

### Business Prospective, Not Actual

Chicago, Jan. 29.—Actual placement of reinforcing concrete bars last week was the smallest in months but selling interests are figuring on an unusually large tonnage and believe some large jobs will be let shortly. Estimating departments are busy and a number of jobs that have been hanging fire for some weeks appear ready to break. Local interests have bid for the 900 tons in the substructure for the Columbia Gas & Electric Co. powerhouse at Cincinnati; the superstructure will require a much larger tonnage later. The largest single job in this territory is the Snelling-Mendota bridge, at Minneapolis, which will require from 400 to 2600 tons, depending upon a decision to use structural steel or concrete. The range on reinforcing bars continues 2.75c to 3.00c, Chicago, with the latter the most quoted price.

### More Inquiries Coming Out

Cincinnati, Jan. 29.—A fair number of good sized reinforcing concrete bar jobs are pending. The 400 tons for the municipal stadium at Terre Haute, Ind., has been awarded to the Franklin Steel Works. Some buyers are waiting for the market to set and are holding up orders which have been pending for many weeks, covering bars for school buildings and other improvements. Many jobs requiring about 50 tons each have been awarded in the past week. Among the important jobs that will come up shortly for figuring are the new Masonic Temple and the $20,000,000 generating plant of the Union Gas & Electric Co., which will be erected on the Ohio river, near Cleves, O.

#### CONCRETE CONTRACTS PLACED

| | |
|---|---|
| **Awards this week** | **1,200 tons** |
| **Awards last week** | **2,725 tons** |
| **Awards two weeks ago** | **4,979 tons** |

400 tons, municipal stadium, Terre Haute, Ind., to Franklin Steel Works.
260 tons, Jack's Run bridge near Pittsburgh, to Jones & Laughlin Steel Corp.
210 tons, universal road in Allegheny county, Pa., Booth & Flinn, general contractor; to Concrete Steel Co.
150 tons, state highway, Green county, Waynesburg, Pa.; Samuel Gambell Co., general contractor; to Concrete Steel Co.
100 tons, Public Service Corp. of New Jersey, power station, Kearny, N. J., to Corrugated Bar Co.
100 tons, office building, Fifteenth street near Clay street, Oakland, Cal., to Gunn, Carle & Co.

#### CONCRETE CONTRACTS PENDING

1500 tons, sewer, Brooklyn, N. Y.; bids being taken on general contract.
900 tons, substructure for powerhouse, Cincinnati, for Columbia Gas & Electric Co.; bids in.
800 tons, three school buildings, Philadelphia; pending.
400 tons, Snelling-Mendota bridge, Minneapolis; bids in Feb. 14. If concrete instead of steel is used for superstructure total will be 2600 tons.
336 tons, Federal building, Milwaukee; bids close Feb. 20 at United States engineering office, Maj. F. S. Skinner in charge.
250 tons, Clairton, Pa., high school; job being refigured.
150 tons, marine tower dock, Pillsbury Flour Co., Buffalo, N. Y.; Monarch Engineering Co. general contractor; steel not yet placed.
150 tons, West Virginia state fair exhibition, building to be erected on the island near Wheeling, W. Va.; R. R. Kitchen Co., general contractor; bids being taken.
120 tons, building for Mine Safety Appliance Co., Pittsburgh; bids in.
100 tons, building for Moose lodge, Hastings, Pa.; bids being taken.
100 tons, Coraopolis, Pa., high school; bids close Feb. 15.
100 tons, Fairmont, W. Va., waterworks; to be placed this week.

# Pipe Mill

## Bookings Increase as Oil Market Recovers—Cast Demand Strong

PIPE PRICES, PAGE 321 AND 382

Pittsburgh, Jan. 29.—Improvement in the oil market has resulted in considerable improvement in the pipe market. More wells are being drilled and consumption of tubular products is heavier. Casting, surface pipe, ground pipe and other forms of tubular goods used in the oil districts all are active, which together with the sustained demand for standard merchant pipe is keeping the mills on a full operating basis. The National Tube Co. as well as independent producers have heavy order books and deliveries of lapweld pipe are from two to four weeks deferred, buttweld deliveries being made in four to six weeks after receipt of orders. Operations are nearly full; in the case of the leading interest which has 10 out of 11 blast furnaces active, its pipe finishing departments are working 100 per cent. The other blast furnace will go on as soon as its lining has been repaired. The general average of pipe mill operation is between 90 and 95 per cent or 10 per cent higher than in December. Orders are a matter of daily receipt from jobbers in amounts of one to three carloads at a time. The aggregate tonnage is exceptionally large and denotes general improvement. Line pipe business in large quantities still is withheld. Locomotive and stationary engine boiler tube orders are scarce. The automotive industry is furnishing a fairly large amount of seamless tubing business and other lines of mechanical tubing consumption are fairly active although competition still is keen for available business. No change has taken place in the quoted bases of tubular goods. In seamless steel mechanical tubing some slight price concessions have been made in recent weeks.

### Large Lot To Test Market

New York, Jan. 29.—Dominating the local cast iron pipe market is the lot of more than 11,000 tons for the water department of this city, noted in a recent issue. Trade interests believe that the opening of bids on this tonnage Jan. 31 will afford a good index as to the actual status of the market, which for some time past has been virtually unchanged and untested. Little municipal work has yet developed this year. Considerable work of this character is not far off.

### Prices Continue Firm

Chicago, Jan. 29.—Pipe prices continue firm although cast iron pipe makers are willing to make concessions on the larger sizes. They are holding firmly to the level of $61.20 to $62.20, Chicago, for 4-inch and $57.20 to $58.20, Chicago, for 6-inch and over. The United States Cast Iron Pipe & Foundry Co. has been awarded 1000 tons at Cincinnati. It seems likely that the American Cast Iron Pipe Co. and the United States Cast Iron Pipe & Foundry Co. will take the 2650 tons which Milwaukee is expected to award this week. The largest single job before makers is the 11,000-ton project at Detroit.

#### CAST IRON PIPE PLACED

2250 tons, 4, 6, 8, 10-inch class C pipe for Los Angeles, to Grinnell Co. of Los Angeles, representing a Belgian mill.
1655 tons, 42-inch pipe, flexible joints, for Hetch Hetchy project, bids close Feb. 20.
1000 tons, Cincinnati, to United States Cast Iron Pipe & Foundry Co.
650 tons, 6 to 20-inch pipe for Santa Barbara, Cal., to American Cast Iron Pipe Co.
240 tons, 4, 6 and 8-inch pipe, Palms, Cal., to American Cast Iron Pipe Co.
187 tons, 4 and 6-inch pipe, San Bernardino, Cal., to National Cast Iron Pipe Co.

#### CAST IRON PIPE PENDING

2625 tons, 6 to 20-inch class D pipe for Vernon, Cal.; bids in.
2500 tons, 6, 8, 12 and 16-inch water pipe for Milwaukee; United States Cast Iron Pipe & Foundry Co. reported low bidder. Amer-

ican Cast Iron Pipe Co. low bidder on 120 tons of castings.
400 tons, Mankato, Minn.; bids in.
340 tons, 6-inch class B pipe for Spokane, Wash., bids in.
298 tons, to 18-inch pipe for San Buenaventura, Cal.; bids in.

## Wire Orders Heavy

### Mills Have Large Backlogs and Buying Keeps Up at Steady Rate

WIRE PRICES, PAGE 321

New York, Jan. 29.—Purchases of wire and wire products have broadened the past week. At some mills operations are at 80 to 85 per cent of capacity. Indications point to further increase in bookings and it is believed wire and wire products shortly will be in the same class as tin plate and pipe. This is expected to be true with the placing of larger nail business as spring approaches. Prices continue firm at 3.00c base Pittsburgh for nails and 2.75c for wire.

#### Cold Retarding Factor

Chicago, Jan. 29.—Specifications for wire and wire products have been held back slightly by recent cold. Business still is on a high plane but has fallen slightly. Every indication still points to comfortable business the next few months. Nails continue most in demand, although all products are sought. Prices are firm.

#### Sell Mixed Carloads

Pittsburgh, Jan. 29.—Mixed carloads of wire products are being ordered by jobbers, practically all of whom are taking their minimum quota of 1000 rods of fencing when orders of this kind are placed. Straight carloads of nails are noted from time to time but most orders call for nails, barbed wire and fencing. Operations average 75 per cent of capacity with some mills at a higher rate. Plain wire is quoted at 2.75c with wire nails holding steadily at 3.00c, base Pittsburgh.

## Specify Heavily on Tin Plate Orders

TIN PLATE PRICES, PAGE 321

Pittsburgh, Jan. 29.—Heavy specifications are being made in tin plate. Some are for March shipment, and others for April. One order involves about 5000 tons of one size, in excess of 100,000 base boxes. Others calling for 40,000 or 50,000 base boxes of a size at a time are more common. Operations remain approximately the same, the general average being over 90 per cent and some mills maintain schedules of 95 per cent or higher. The price is firm at $5.50 per base box of 100 pounds. Pittsburgh. New inquiries are scarce, as most users are covered fully by contracts. Occasionally an inquiry appears but delivery is so deferred that where the material is wanted quickly demand has to be supplied from stock to meet requirements.

#### Tin Plate Sold From Stock

Philadelphia, Jan. 29.—Tin plate business comprises mostly stock material as the majority of consumers are under contract. Stocks continue to be quoted at 5.25c to 5.50c, Pittsburgh.

# Sheet Mills Well Booked

### Operations Continue Satisfactory Despite Fact Many Automobile Companies Have Not Contracted for First Quaater—Buying Holds Up

SHEET PRICES, PAGE 321

Pittsburgh, Jan. 29.—Orders for sheets this week show a marked improvement over last. Specifications on sheet needs of various consumers have involved some pleasing individual tonnages during the past few days. If this increased ratio of buying keeps up, sheet mill operation will be forced upward before long. Many users, particularly those in the automotive industries, have failed as yet to contract for their first quarter requirements but the sheet producers are just as well satisfied since these are furnishing actual orders or specifications each week more or less in harmony with their increasing production programs. Just now mills are well up to their obligations; in fact, some are a step or two ahead of them as a result of anticipation. Almost every consuming line continues to be represented among each week's list of buyers. The stove and range industries, agricultural implement makers, the metal lath producers and other lines each furnishes its quota and large tonnages continue to be absorbed by the automotive industries, these four lines of consumption occupying prominent places in the list of current buyers. The buying of sheets by the automobile manufacturers promises to increase, since if they attain 75 per cent of the business they contemplate for 1924, the full-finished sheet mills of the country will be able to supply their demands only with great difficulty. One automotive interest which did contract for its first quarter requirements already has specified all but about 8 per cent, consequently additional orders will doubtless have to be placed for its February and March needs. Full-finished automobile sheets are quoted firmly at 5.35c base Pittsburgh, although in connection with blue annealed, black and galvanized concessions appear now and then but so far as can be learned these do not exceed $2 per ton below the going market levels on these three grades, of 3.00c, 3.85c and 5.00c, base Pittsburgh, respectively. The lower figures of 2.90c, 3.75c and 4.90c, base Pittsburgh, respectively, are offered by those companies which did not participate largely in the buying movement of last December when sales for the independent group of sheet producers reporting to the National Association of Sheet and Plate Manufacturers doubled the sales of November.

#### Second Quarter Books Opened

Boston, Jan. 29.—Interest in second quarter sheets has advanced rapidly throughout the past week. One or two sellers are starting to take orders for that delivery. Specifications which are being prepared by the larger consumers are decidedly encouraging. Prices are firm.

#### Sheet Buying Continues Small

New York, Jan. 29.—Sheet buying is somewhat better, but continues small in the aggregate as compared with shipments. Some of the mills report increased specifications on contracts. On the whole, mills continue in a fairly comfortable condition and prices are unchanged. On galvanized sheets the usual price is 5.00c, base Pittsburgh, but 4.90c has not disappeared entirely. On attractive tonnages of black sheets the market is 3.75c to 3.85c, base Pittsburgh, with 3.70c being done occasionally. Blue annealed sheets continue firm at 3.00c, base Pittsburgh.

#### Adopt One-Price Policy

Youngstown, O., Jan. 28.—Some relaxation in the volume of sheet business being entered on mill books is apparent in some instances while in others a broadening trend is reported. Today, the reception accorded new inquiry for sheets, as far as this district is concerned, reflects a one-price policy, namely 3c on blue annealed, 3.85c on black and 5c on galvanized, Pittsburgh, with the exception of fill-in tonnage frequently desired to close up gaps in the rolling schedule. District operation of sheet mills is being conducted on a basis of 77 per cent of capacity and order books mirror the continuation of this rate at least through another month. No large inquiry for any grade is in the market at present although spot buyers are inquiring for tonnage in such volume as would indicate no particular rush for delivery. Some of the larger jobbing interests are increasing their contract requirements particularly in galvanized. The roofing trade also is supporting the market.

#### Full for First Quarter

Chicago, Jan. 29.—The leading maker of steel sheets in this district now is practically full for the first quarter, although it still can sandwich in pressing requirements. Automobile business has not been so good this past week. Warehouses now appear to have anticipated about all of their first quarter needs. As in other lines of finished steel, price has receded from a place of importance and quotations are firm at 3.00c, Pittsburgh, for blue annealed, 3.85c for black and 5.00c for galvanized.

#### Slack Demand Is Temporary

Philadelphia, Jan. 29.—Sheet demand is somewhat smaller but eastern mills continue to operate full and the smaller demand is regarded as only temporary. Blue annealed continues firm at 3.00c, Pittsburgh; black ranges from 3.70c to 3.85c; and galvanized generally is 5.00c although 4.90c is being done in some cases.

## Small Strike Settled

The strike of laborers at the Dover, N. J., plant of the Richardson & Boynton Co. has been settled, and the 900 men who went out Jan. 2 have returned. The laborers demanded a 10 per cent increase. They have been granted an increase of approximately 7½ per cent and now are receiving 58 cents an hour instead of the former rate of 54 cents.

# Structural Buying Large

## More Consumers Enter Market for Heavy Tonnages as Mill Deliveries Are Deferred—Increased Bookings Strengthen Prices

STRUCTURAL SHAPE PRICES, PAGE 321

Pittsburgh, Jan. 29.—Greatly improved conditions in the structural market is indicated by the delivery situation. In December almost any delivery could be had; now deliveries on average orders are post-dated about four weeks. Fabricating shops still are operating practically full although bookings have not been numerous lately from this vicinity. One job for a building on Penn avenue here placed through H. R. Little & Sons contractor, went to McClintic-Marshall Co. and involves 555 tons. Bridge work for the Louisville & Nashville railroad involving 1950 tons was awarded the American Bridge Co. Much interest is manifested here over the prospects of the early award of the steel plant proper of the Ford Motor Co.'s project at River Rouge, Mich., involving anywhere from 15,000 to 25,000 tons. The 15,000 tons already awarded on this project, as reported in IRON TRADE REVIEW, Jan. 10, is being made up for the spring and upset shop and the pressed steel plant. Two inquiries are pending here from Huntington, W. Va., for the Coal Exchange building and a bank structure involving 650 tons each.

### Spring Work Is Heavy

Boston, Jan. 29.—Construction work for the spring of 1924 in New England bids fair to be unusually heavy. New projects are developing each week and some round tonnages are already up for figures. Contracts of the past week include 800 tons for a Hartford, Conn., high school and 300 tons for a Chelsea, Mass., high school. Bids are being received for 2000 tons for an office building in Boston and preliminary plans have been prepared for an additional 2000 tons for a theater building. Plain material prices continue from 2.40c to 2.50c, Pittsburgh.

### Awards Again Deferred

Cleveland, Jan. 29.—Awards of structural shape tonnages again are being deferred. Heavy inquiries continue to appear but few projects are being closed. Among the awards of the week were 300 tons for Arthur G. McKee & Co. in the Pittsburgh district to American Bridge Co. and 200 tons for the Holland Bread Co., Toledo, O., to the same interest. The First National bank of Youngstown, a 12-story building project involving 1000 tons, again is reported as active. Deliveries are more delayed with about three months the average. Plain material prices are firm at 2.50c, Pittsburgh. Including the Louisville & Nashville railroad bridgework a tonnage pending of approximately 12,000 tons is active in this territory.

### Weekly Inquiry Over 15,000 Tons

New York, Jan. 29.—Structural demand continues active. One leading fabricator states that inquiry in this district is averaging 15,000 to 20,000 tons weekly, and that a substantial portion is from the local metropolitan section. Increasing strength is reflected by the firmer attitude of mills, which are not offering concessions under 2.50c, Pittsburgh, to the larger consumers as was noted recently.

### Buying Somewhat Better

Philadelphia, Jan. 29.—Structural shape demand is somewhat better with the price situation generally unchanged except that 2.30c, Pittsburgh, now is being quoted on some attractive business. The usual market price here is $2.40c, Pittsburgh, with occasionally some business going at 2.35c, Pittsburgh.

### Placements Few; Prospects Good

Chicago, Jan. 29.—Actual awards of structural steel continue light but prospective tonnages coming out are good. Bids are now in on a 2000-ton job for the Sawyer Amusement Co., Chicago, and the 1150 tons Riding Club building, Chicago. The largest letting of the past few days was 367 tons for Burlington railroad bridge spans to the American Bridge Co. All reports from territory tributary to Chicago bear out indications that a record-breaking volume of new construction is about to come out. The plain material price continues 2.60c, Chicago.

### Substantial Buying Done

Cincinnati, Jan. 29.—Substantial buying again features the local structural market. Several sizable tonnages have been placed, the largest being 2000 tons for Kentucky hotel at Louisville, Ky., which went to the American Bridge Co. This same company was awarded 1950 tons for bridge work purposes of the Louisville & Nashville railroad. The Jones & Laughlin Steel Corp. has been awarded 700 tons in the new car barns of the Indianapolis Steel railway. The proposed plant of the General Match Co., at Reading, Pa., will require 200 tons, while the Standard Oil Co. is contemplating erection of two oil stills at Louisville that will require approximately 300 tons. The amount of 1924 building on architects' boards continues to increase and the outlook is that a tremendous amount of business will come out between now and June 1. Plain material prices are firm.

### STRUCTURAL CONTRACTS PLACED

| | |
|---|---|
| **Building awards this week.....** | **20,937 tons** |
| **Building awards last week.....** | **52,581 tons** |
| **Building awards two weeks ago.** | **10,576 tons** |

2400 tons, Shroder-Koppel loft building, Thirty-ninth street and Seventh avenue, New York, to McClintic-Marshall Co.

2000 tons, Kentucky hotel, Louisville, Ky., to American Bridge Co.

1950 tons, bridgework, Louisville & Nashville railroad, to American Bridge Co.

1550 tons, loft building at 6470 East Thirty-sixth street, New York, to George A. Just Co.

1400 tons, plant addition for Westinghouse Electric & Mfg. Co., for manufacture of turbine blades, Essington, Pa., to McClintic-Marshall Co.

1000 tons, Railway Co-operative Building & Loan association, Vanderbilt and Thirty-fourth street, New York., to Levering & Garrigues.

1000 tons, Magoba loft building, West Twenty-ninth street, to Independent Bridge Co.

950 tons, Masonic Temple, Springfield, Mass., to Lehigh Structural Steel Co.

800 tons, high school, Hartford, Conn., to Palmer Steel Co.

700 tons, state grain elevator at Oswego N. Y., to Bancroft Jones Co.

700 tons, car barns, Indianapolis Street Railway Co., to Jones & Laughlin Steel Corp.

600 tons, gas tank, Connecticut Power Co., New London, Conn., to Stacey Mfg. Co.

555 tons, building on Penn avenue, Pittsburgh, through H. R. Little & Sons, general contractor, to McClintic-Marshall Co.

400 tons, Tishman apartment, 269 West Seventy-second street, New York, to Bethlehem Fabricators, Inc.

400 tons, Union hall, Cornell university, Ithaca, N. Y.; to Bancroft Jones Co.

400 tons, power plant extension for Adirondack Light & Power Co., Amsterdam, N. Y., to Shoemaker Bridge Co.

400 tons, loft for S. S. Roth, 202 West Thirty-fifth street, New York, reported in last week's issue as placed, to Paterson Bridge Co.

400 tons, Hempstead telephone exchange, Los Angeles, to Union Iron Works.

367 tons, deck plate girder spans and three steel viaduct towers for Burlington railroad, to American Bridge Co.

314 tons, bank building for Standard Safe Deposit Co., Chicago, to American Bridge Co.

300 tons, building for Arthur G. McKee & Co., Cleveland, in the Pittsburgh district, to American Bridge Co.

300 tons, Middough building, Long Beach, Cal., to Baker Iron Works.

300 tons, plant addition for Mutual Potteries Co., Trenton, N. J., to American Bridge Co.

300 tons, high school, Chelsea, Mass., to Phoenix Iron Co.

250 tons, Peddie institute, Hightstown, N. J., to American Bridge Co.

248 tons, church, Roxbury, Mass., to Palmer Steel Co.

200 tons, high school, South Bend, Ind., to Rochester Bridge Co.

200 tons, Holland Bread Co., Toledo, O., to American Bridge Co.

178 tons, truss span for Mobile & Ohio railroad, to Virginia Bridge & Iron Co.

125 tons, telephone exchange, Sacramento, Cal., to Judson Mfg. Co.

125 tons, telephone exchange, Richmond, Cal., to Judson Mfg. Co.

110 tons, addition to Fair Store, Chicago, to American Bridge Co.

108 tons, sand and gravel bridges for Wilcox Co., Bardwell, Wis., to unnamed fabricator.

107 tons, office building for Thorpe Bros., Minneapolis, to American Bridge Co.

100 tons, apartment, Eddy street near Hyde, San Francisco, to Central Iron Works.

100 tons, apartment at Octavia and California streets, San Francisco, to Central Iron Works.

### STRUCTURAL CONTRACTS PENDING

18,000 tons, Dupont hotel, New York; general contract awarded to Todd, Robertson, & Todd. Steel not up for many weeks.

5000 to 6000 tons, building in Grand Central terminal district, New York; Dwight P. Robinson reported taking figures.

2000 tons, Sawyer Amusement Co., Chicago; bids in.

2000 tons, Liability Insurance Co. building, Boston; bids close Feb. 20.

2000 tons, shop buildings for Southern railway, Birmingham, Ala., bids being received through Dwight P. Robinson, 61 Broadway, New York; further tonnage for this is to be brought out later.

1300 tons, Security Trust & Savings Bank building, Long Beach, Cal.; bids in.

1200 tons, highway bridges for Delaware, Lackawanna & Western; bids in.

1150 tons, Riding Club of Chicago, Chicago; bids in.

1000 tons, city hall and municipal building, Bluefield, W. Va.; bids being taken by city manager, C. E. Rideley.

1000 tons, 12-story building for First National bank, Youngstown, O.; again active.

800 tons, apartment at Fifth avenue and Ninety-seventh street, New York; Dwight P. Robinson, Inc., engineer.

800 tons, public school, No. 197, Brooklyn, N. Y.; pending.

800 tons, express station, for Boston & Albany, Springfield, Mass., previously noted as pending; bids in.

650 tons, Coal Exchange building, Huntington, W. Va.; bids being taken.

650 tons, bank building, Huntington, W. Va.; bids being taken.

500 tons, Partos apartment, East Ninety-seventh street, New York; figures out soon.

500 tons, Masonic Temple, Portsmouth, O.;

bids being received.
400 tons, bakery for the Burwick Cake Co., Boston, project set aside.
400 tons, addition to James A. Hearn department store, Fourteenth street, New York; bids asked.
350 tons, Pennsylvania railroad bridge at Auglaize, O.; bids in.
300 tons, office and garage building for Mack Motor Truck Co., Boston; bids in.
300 tons, Lerner theater, Elkhart, Ind., pending.
300 tons, oil stills, Standard Oil Co., Louisville, Ky.; bids up for figures soon.
250 tons, two boiler houses and plant alteration for Westchester Light Co., Yonkers, N. Y.; bids asked.
150 tons, alteration at Hellgate plant of United Electric Light & Power Co., New York; bids asked.
100 tons, school house, Hamburg, N. Y.; pending.

## Building Program

### Of Steel Corporation Provides for Homestead and Gary

New York, Jan. 29.—Extensive improvement projected for the Homestead works of the Carnegie Steel Co. and extensions for the Gary works of the National Tube Co., which previously have been announced in these columns were mentioned in a formal statement issued recently by Chairman E. H. Gary of the United States Steel Corp.

"Just at present we are contemplating the rearrangement and improvement of some of the mills of the Homestead works at Pittsburgh, and have appropriated $6,000,000 on account of the same. How much the total will be we are not prepared to say now and will not be for some time. We are also proposing to complete the tube plant at Gary, Ind., which has been in process of construction for over a year. We have likewise lately recommended $6,000,000 on account of this work. Also, we have recommended the construction of an additional unit of 140 by-product coke ovens at Gary to meet the full requirements of the large number of blast furnaces at Gary and South Chicago, which have heretofore been built and have been in operation for some years. For these ovens we have appropriated over $3,000,000. These, of course, do not include all the work that is being done or is contemplated, but they are the leading items."

## Rehabilitate Steelworks

Pittsburgh, Jan. 29.—Formal announcement from New York on Jan. 24 that the United States Steel Corp. had arranged for a $15,000,000 construction program was followed by the statement by President H. D. Williams of the Carnegie Steel Co. here that $6,000,000 of that amount already appropriated would be utilized to modernize a portion of its Homestead steelworks. No expansion of the Homestead works is contemplated or provided for in the appropriation, he said, and the rehabilitation will condense rather than enlarge the present plant.

Work provided for in the appropriation, Mr. Williams said, will probably begin as soon as plans are completed. The modernization program is understood to be a part of a plant to rebuild the entire Homestead steelworks which has been talked of for several years. The capacities of many open hearth furnaces will be increased.

# Car Orders Being Closed

### Negotiations for Many Cars Reported—Chicago & Northwestern Buys 46,000 Tons of Rails—Track Accessory Demand Is Heavier

RAILROAD TRACK MATERIAL PRICES, PAGE 321

Chicago, Jan. 29.—It is held in some quarters that actual bookings of car orders in this district and in the East have been much heavier than is generally known or supposed. For freight cars now before local builders it is estimated the plate, shape and bar requirement will be 50,000 tons, plus 7000 to 8000 tons for axles and wheels.

Track fastenings have been active. The Soo Line has placed 3700 tons of tie plates with Chicago mills. The Chicago & Northwestern has placed 5000 tons of angle bars. Other tie plate business has included 2200 tons by the Wabash and 6000 tons by the Missouri Pacific, all of which went to Chicago mills. The Missouri Pacific inquiry for 12,000 tons of tie plates probably will go to the Colorado Fuel & Iron Co., Tennessee Coal, Iron & Railroad Co. and the Illinois Steel Co.

The Chicago & Northwestern railroad has awarded 35,000 tons of rails to the Illinois Steel Co., 6000 tons to the Bethlehem Steel Co. and 5000 tons to the Inland Steel Co. The Soo Line has placed 8700 tons with local mills.

### Demand Continues to Broaden

New York, Jan. 29.—Car demand continues to broaden, with the volume of business being placed this month the largest in some time. One of the latest large items in the local district is the placing of 500 box cars by the Rutland railroad.

Other inquiries call for 10 locomotives for the Norfolk & Western, eight for the Maine Central and one for the Kansas City Southern. The International Great Northern, which now is figuring on some coaches, is reported to be contemplating the purchase of five locomotives. Orders include four locomotives for the Madras & Southern Mahratta of India, awarded the Baldwin Locomotive Works, and one for the Yosemite Valley railroad, placed with the American Locomotive Co.

### Large Tie Plate Inquiry Out

Philadelphia, Jan. 29.—The Pennsylvania railroad is inquiring for from 200,000 to 500,000 tie plates, equivalent to from 1000 to 2000 tons. The Pennsylvania has announced that its purchases for its entire system will be concentrated in Philadelphia effective Feb. 15.

### Price Competition Keener

Pittsburgh, Jan. 29.—Some producers of light rails made from billets are considering advisability of meeting competitive conditions by quoting 2.15c base Pittsburgh. Others continue to name 2.25c on small orders which are being placed. One reroller is quoting the same figure as on billet-rolled rails while others are closing sales of 50 to 100 tons each at 1.85c to 1.95c, base Pittsburgh. Prices are unchanged on track accessories with no large business being placed here this week.

Orders to repair 250 coal hopper cars were received recently by the Wheeling, W. Va. office of the American Car & Foundry Co., from the Chesapeake & Ohio railroad, Huntington, W. Va. That road distributed orders to repair 750 other cars of the same type among several other car builders.

### Equipment Buying Better

Toronto, Ont., Jan. 28.—Railway equipment manufacturers of Canada are preparing for considerable activity during 1924, following little buying in the past few years. Canadian Pacific is building 300 freight cars. The Canadian National system is expected to enter the market soon for a substantial quantity of rolling stock. British Empire Steel Corp. has booked 56,000 tons of rails for March delivery from the Canadian National railways.

#### CAR ORDERS PLACED

Canadian Pacific, 15 steel frame colonist cars, 10 days coaches, 7 baggage cars and 4 combination baggage and smoking cars, to National Steel Car Corp.
Chesapeake & Ohio, 1000 coal hopper car repairs, 250 to American Car & Foundry Co. and 750 to several other car builders.
Philadelphia & Reading railroad, distribution of 1000 hopper cars, as announced in last week's issue; 400 to Pressed Steel Car Co. and 200 each to American Car & Foundry Co., Standard Steel Car Co. and Cambria Steel Co.
Pullman Co., 100 standard sleeping cars, to own shop.
Rutland railroad, 500 box cars, to Youngstown Steel Car Co.
Canadian National, 24 coaches, to Canadian Car & Foundry Co.
Central of Georgia, 15 miscellaneous coaches, to Pullman Co.
Chicago, Burlington & Quincy, six dining cars, to Pullman Co.
Union Pacific, 500 tank cars, divided evenly between American Car & Foundry Co. and Standard Tank Car Corp.
Philadelphia & Reading, 50 stock cars, to Standard Steel Car Co.
Lehigh & Hudson River, 10 refrigerators, to American Car & Foundry Co.
Seaboard Air Line, repair of 299 steel phosphate cars, to Tampa Drydock Co.
Landreth Gasoline Co., Breckenridge, Tex., 50 tank cars, to General American Tank Car Corp.
Pacific Coast, 15 general service cars, to Pacific Car & Foundry Co.
Pennsylvania, 2000 box car bodies reported divided between Newport News Shipbuilding & Dry Dock Co. and Standard Steel Car Co.
Lehigh Valley, 10 milk cars, to American Car & Foundry Co.

#### CAR ORDERS PENDING

Maine Central, 350 cars of various types; pending.
Universal Portland Cement Co., 50 hoppers; pending.
Illinois Central, 1900 box car repairs, 195 flat car repairs; bids asked.
Charleston & West Virginia, 32 underframes; pending.
Henry L. Dogherty & Co., 60 Wall street, New York, 370 tank cars for subsidiary companies; bids asked.
Oliver Iron Mining Co., Pittsburgh, 25 stripping cars; pending.
Nashville, Chattanooga & St. Louis, 50 hopper cars; pending.
Maine Central, 250 box and 100 gondola cars; pending.
Central Steel Co., Massillon, O.; reported in the market for 12 gondolas.
Maine Central, 13 miscellaneous coaches; pending.
International Great Northern, 10 miscellaneous coaches; bids asked.
New York Central, 50 coaches; pending.
Chicago, Burlington & Quincy, 30 coaches; bids asked.
Norfolk & Western, 4000 hoppers; pending.
Pennsylvania, 2000 stock car bodies; pending.

# The Nonferrous Metals

**Prices Stronger and Trading Generally Active—Copper and Zinc Up —Lead Maintains Strength—Tin Jumps and Falls**

| | Copper—Electro delivered | Copper—Lake delivered | Spot Straits New York | †Lead New York basis | Zinc St. Louis basis | Spot† aluminum | Spot antimony | Nickel spot |
|---|---|---|---|---|---|---|---|---|
| Jan. 23 | 12.75 | 13.00 | 52.00 | 8.37½ | 6.50 | 27.00 | 10.50 | 29.00 |
| Jan. 24 | 12.80 | 13.12½ | 51.00 | 8.37½ | 6.50 | 27.00 | 10.50 | 29.00 |
| Jan. 25 | 12.85 | 13.12½ | 49.50 | 8.25 | 6.47½ | 27.00 | 10.50 | 29.00 |
| Jan 28 | 12.80 | 13.12½ | 48.75 | 8.25 | 6.50 | 27.00 | 10.50 | 29.00 |
| Jan. 29 | 12.80 | 13.00 | 48.50 | 8.25 | 6.50 | 27.00 | 10.50 | 29.00 |

†Outside market quotation.

CLEVELAND, Jan. 29.—Year-end inventories are out of the way and with the business outlook bright for at least the first half of 1924, metal consumers have been buying more actively this past week. Prices have strengthened in copper and zinc.

Copper, which had been the market laggard, recovered sharply on active demand stimulated by the obviously low price it had reached. The price now is 12.75c to 13c, delivered; the latter figure applies to certain middle western shipments.

Lead maintains its previous strength, held in check by the cautious policy of leading producing factors. Some interference was reported with Mexican ore shipments but not sufficient to cause marked anxiety. Prices are 8.12½c St. Louis, 8.25c New York, prompt February; March 8c in both cities.

Spot tin jumped over night on account of the delay in January arrivals of certain vessels, but has slipped back to 48.50c.

Spot virgin ingot aluminum sold in the outside market at premiums 2 cents over the domestic producer's quotation.

Zinc strengthened to 6.50c, St. Louis and some export business was done. Galvanizers also have been more active in the market.

The better feeling in the New York market was shared abroad, equivalents rising in London despite the decline in sterling.

Rolled products and wire are unchanged.

## Mill Products

**Base prices cents per pound, f.o.b. mill**

| | |
|---|---|
| **SHEETS** | |
| Copper, hot rolled, 4 oz., min.. | 20.50 |
| High brass | 17.25 |
| Zinc, ga. 9 to 18 (plates ½c less) | 9.50 |
| Lead, full sheets (cut ¼c more) | 11.50 |
| Aluminum, base 18 ga. and up.. | 36.40 |
| **SEAMLESS TUBES** | |
| High brass | 21.50 |
| Copper | 22.50 |
| **RODS** | |
| High brass, round, ¾ to 2½-inch | 15.00 |
| Naval brass rods | 17.75 |
| **WIRE** | |
| Copper | 15.00 to 15.25 |
| High brass | 17.75 |

## Old Metals

**Dealers' buying prices cents per pound**

| | |
|---|---|
| **HEAVY RED BRASS** | |
| Cleveland | 9.00 to 9.50 |
| New York | 8.50 to 8.75 |
| Chicago | 8.75 to 9.00 |
| **HEAVY YELLOW BRASS** | |
| New York | 5.50 to 6.00 |
| Chicago | 6.75 |
| Cleveland | 6.75 |
| **ZINC** | |
| New York | 4.00 to 4.25 |
| Cleveland | 3.75 to 4.00 |
| Chicago, dross | 4.50 |
| **HEAVY COPPER AND WIRE** | |
| Cleveland | 10.00 to 10.50 |
| New York | 10.00 to 10.25 |
| Chicago | 10.50 |
| **RED BRASS TURNINGS** | |
| New York | 7.50 to 7.75 |
| Cleveland | 8.25 to 8.50 |
| Chicago | 8.25 to 8.50 |
| **YELLOW BRASS TUBING** | |
| Cleveland | 5.50 to 6.00 |
| **NO. 1 BRASS ROD TURNINGS** | |
| Cleveland | 5.50 to 6.00 |
| New York | 6.00 to 6.50 |
| Chicago | 6.50 |
| **ALUMINUM BORINGS** | |
| Cleveland | 12.00 |

## British Production for Year 1923 Is Higher

London, Jan. 14.—Production of pig iron in Great Britain in December according to official figures of the National Federation of Iron and Steel Manufacturers was 626,900 gross tons compared with 598,200 tons in November and 533,700 tons in December, 1922. This is the highest output since July and is 59,000 tons more than for January, 1923. There were 204 furnaces in blast at the end of December compared with 199 Nov. 30, and 169 at the end of December, 1922.

Details for the past three years are as follows:

**PIG IRON**

| | 1923 | 1922 | 1921 |
|---|---|---|---|
| January | 567,900 | 288,000 | 642,100 |
| February | 543,400 | 300,100 | 463,600 |
| March | 633,600 | 389,800 | 386,000 |
| April | 652,200 | 394,300 | 60,300 |
| May | 714,200 | 407,900 | 13,600 |
| June | 692,900 | 369,200 | 800 |
| July | 655,100 | 399,100 | 10,200 |
| August | 599,800 | 411,700 | 94,200 |
| September | 558,600 | 430,300 | 158,300 |
| October | 595,700 | 481,500 | 235,500 |
| Novmeber | 598,200 | 493,900 | 271,800 |
| December | 626,900 | 533,700 | 275,000 |
| Total | 7,438,500 | 4,899,500 | 2,611,400 |

**STEEL INGOTS AND CASTINGS**

| | 1923 | 1922 | 1921 |
|---|---|---|---|
| January | 634,100 | 327,500 | 493,400 |
| February | 707,100 | 418,800 | 483,500 |
| March | 802,500 | 549,400 | 359,100 |
| April | 749,400 | 404,200 | 70,600 |
| May | 821,000 | 462,300 | 5,700 |
| June | 767,700 | 400,200 | 2,700 |
| July | 639,500 | 473,100 | 117,200 |
| August | 567,500 | 528,400 | 434,100 |
| September | 695,100 | 555,900 | 429,300 |
| October | 702,200 | 565,200 | 405,400 |
| November | 749,500 | 600,800 | 443,800 |
| December | 653,300 | 546,100 | 381,000 |
| Total | 8,488,900 | 5,831,900 | 3,625,800 |

Production of steel ingots and castings in December was 653,300 tons compared with 546,100 tons in December, 1922. The output for December was 19,200 tons above the output at the beginning of the year. Total production of steel ingots and castings in Great Britain for 1923 was 8,488, 900 tons compared with 5,831,900 tons in 1922, and 7,663,876 tons in 1913.

## By-Product Market

**Strengthened by Increase in Prices of Gasoline—Quotations Unchanged**

New York, Jan. 29.—The upward tendency in gasoline prices with its direct bearing on motor fuel has strengthened the general tone of the light oil distillates market. Prices are as yet unchanged, but they are firmer and an increase within the next three or four weeks is believed likely in some quarters. Demand is better than at any time in several weeks with consumers of light oil distillates in a number of cases coming into the market.

While sulphate of ammonia for domestic consumption is unchanged at $2.70 to $2.75 works, an increase of five points has been made in the export market, sellers now quoting $2.75 to $2.80 port, for material in double bags. This development is attributed chiefly to the likelihood of improved buying shortly for shipment to the Orient. Domestic buying is spotty with the volume of trading virtually unchanged from last week.

Quotations on pure benzol range 19 to 22 cents works in tanks and 90 per cent benzol, 18 to 20 cents in tanks, and 26 cents in drums. Toluol may be quoted at 23 to 24 cents in tanks and 29 cents in drums; solvent naphtha, 23 to 24 cents in tanks, and 29 cents in drums; commerical xylol, 27 to 29 cents in tanks and 34 cents in drums.

Naphthalene is unchanged with the tone of the market strong and the tendency upward. Phenol is quoted at 27 cents works in large lots and 30 cents in small lots.

### Coke Oven By-Products

| | Spot* |
|---|---|
| **Per Gallon at Producers' Plants in Tank Lots** | |
| Pure benzol | $0.19 to 0.22 |
| Toluol | 0.23 to 0.24 |
| Solvent naphtha | 0.23 to 0.24 |
| Commercial xylol | 0.27 to 0.29 |
| **Per Pound at Producers' Plants** | |
| Phenol | 0.27 |
| Naphthalene flake | 0.08½ |
| Naphthalene balls | 0.09½ |
| **Per 100 Pounds at Producers' Plants** | |
| Sulphate of ammonia | $2.70 to $2.75 |
| **Contract** | |
| Pure benzol | $0.22 |
| Toluol | 0.24 |
| Solvent naphtha | 0.24 |
| Commercial xylol | 0.28 |
| **Per Pound at Producers' Plants** | |
| Phenol | $0.27 |
| Naphthalene flake | 0.08½ |
| Naphthalene balls | 0.09½ |

*Spot distillates are subject to shading.

# More Activity on Coast

**Improvement in All Lines Has Appeared Since First of Year—Heavy Plate Tonnages for Pipe Lines Pending—Pig Iron Higher**

SAN FRANCISCO, Cal., Jan. 24.—Greater activity is noted this week in iron and steel products and continued improvement in demand is indicated. While little of importance has come out so far this year, prices generally are becoming firmer and there is a more stabilized tone.

### Pig Iron and Coke

Trading in pig iron and coke remains quiet and it appears real buying will not develop for several weeks. Activity among jobbing foundries is limited, but sanitary ware and stovemakers are working almost at capacity. The inquiry for 1500 tons of No. 2 southern for a local sanitary manufacturing company, reported two weeks ago, has been withdrawn. English material running 2.75 to 3.25 in silicon, 0.2 to 0.6 in phosphorus, 1.0 in manganese and under 0.05 in sulphur is being quoted at $35 c.i.f. coast ports for future delivery while spot iron continues to sell at $33 to $34 a ton. Off grade irons can be had as low as $28 a ton. No. 2 southern is held at $22, furnace, equivalent to $31.60 f.o.b. cars on dock at San Francisco.

The coke market reflects conditions in the iron markets and sales involve relatively small lots on a spot basis. The Southern Pacific railroad closed on one lot of 1000 tons of southern coke. The best grades of foreign beehive coke are $20 a ton while the by-product grade is $18.50.

### Bars, Plates and Shapes

Little improvement is seen in demand for soft steel bars, competition being keen. Some concrete bar awards have been made, over 1000 tons having been placed this week, and over 5000 tons are being figured. Current plate sales have been confined to small lots and inquiry is lacking. No action has been taken on 6000 tons for the Lake Young development project at Seattle nor the 600 tons for storage tanks for Mare Island, bids on which were opened this week. While 2.85c c.i.f., San Francisco, can be obtained on desirable specifications, 2.90c usually applies. One mill quotes 2.60c Atlantic seaboard, equivalent to approximately 3.05c coast ports, but no business has been secured at this figure. Projects pending aggregate 6000 tons or more. Structural fabricating shops are well filled with work. The prevailing price on plain material is 2.90c c.i.f. coast ports, with 2.85c the minimum on desirable tonnages. Due to the fall in exchange, heavier sections in 60-foot lengths are now quoted at 2.35c c.i.f., duty paid San Francisco, while smaller sizes and lengths can be obtained as low as 2.10c.

### Other Finished Material

A better volume of sheet business is coming out, but no heavy specifications or contracts have been received. While rumors persist of 4.90c, base Pittsburgh, on 28 gage galvanized sheets, larger buyers say 5.00c, base Pittsburgh, is the best they have been able to obtain and they are placing business at this figure. As far as can be ascertained no prominent independent companies have shown inclination to go below the 5.00c price.

A number of municipal cast iron pipe awards are pending, involving over 5000 tons. More private business is being placed and some large tonnages are up for figures. Representatives of a French manufacturer have entered the bay district market and have quoted on several jobs.

### Warehouse Material

Out-of-stock distributors report improvement in demand since the first of the year and that orders are being received from practically all sources. All lines are active and prices remain unchanged from those quoted two weeks ago, although increased demand has stiffened some quotations.

# Building Active in West

SEATTLE, Jan. 23.—Building is well sustained, new projects being announced almost daily. Conditions as a whole are satisfactory. Business sentiment is cheerful and in practically all lines the year has opened promisingly.

Engineers at Portland are preparing revised plans for the two large bridge projects, bids for which were recently rejected. Considerable tonnage is involved but the amount is not yet known.

The city has awarded a $155,000 contract for the construction of a steel and concrete viaduct approach to the Spokane street bridge in which several hundred tons of steel are involved. The board of regents has awarded the general contract for the state university library for $123,000, time 185 days. Bids for steel casement sash were rejected. New projects of the week in Seattle include a $35,000 theater building, and a $250,000 garage structure while work on the medical arts building, 16 stories, was begun. The first unit of a $2,000,000 nitrogen plant for Seattle, also is announced for the immediate future. Sugar beet interests are planning a factory near Bellingham, Wash.

Announcement is made that the Independent Bridge Co., Pittsburgh, has been awarded the contract for a 200-foot steel span to cross the Placer river on the Alaska railroad. The structure will be erected during the coming summer.

### Pig Iron and Coke

The drop in European exchange is evidently the cause of attractive prices on foreign pig iron now quoted in this market. Consumers find importers are offering an excellent grade of French iron at $26, c.i.f. Seattle, duty paid, in lots of 500 tons or more or $26.25 in tonnages of less than 500 tons. These prices are considerably below going prices on British and Scotch pig iron and are of interest to foundrymen, who are beginning to outline their requirements for the second quarter. There is no change in the coke situation, demand keeping steady and prices stationary.

### Bars, Plates and Shapes

There is a good turnover in these items, mills and wholesale jobbers reporting business satisfactory. Construction and improvement work is bringing the local mills a fair volume of new orders in small tonnages. Plates are being used largely in repair work while demand for small shapes and channels is well sustained. Prices are unchanged.

### Other Finished Materials

Jobbers state the entire list is moving well. Wholesalers are replenishing stocks in anticipation of a heavy spring movement. Construction materials are firm, buying being steady. Logging and lumbering are operating to full capacity and their requirements are a big factor. Sheets are in fairly good call. Prices are uniform at coast centers.

### Old Materials

The market shows no improvement. Steel scrap is being sold at $9 to $10.50 per gross ton. Prices are too low to attract supplies to buying centers, although steel scrap is accumulating at outside points. There is ample supply for present demand. No. 1 cast iron is still depressed, being quoted at $17 to $20 with $18 as probably a fair average. Little of this material is available, although sufficient for the present. Should interest in this grade revive there is likely to be a shortage with corresponding advance in price.

## Books Sash Weight Order

New York, Jan. 29.—J. K. Larkin & Co., New York, have placed an order for 5000 tons of sash weights with a Birmingham, Ala. foundry. The sash weights will be marketed in the New York territory.

# Steel Corporation

**Earnings for Past Year Increase—Fourth Quarter Also Gains**

Earnings of the United States Steel Corp. for the fourth quarter of 1923 totaling $49,958,980 showed an increase of $2,905,300 over those of the third quarter and $22,406,588 more than the total earnings for the fourth quarter of 1922. The balance of surplus for the nine months ended September totaled $17,143,242, which together with that for the fourth quarter of $19,680,660, aggregated $36,823,902 for the entire year. This total, less $2,541,512 for an extra dividend on common stock of ½ per cent and $20,000,000 appropriated in the second and third quarters for improvements and betterments, leaves a balance of surplus for the year amounting to $14,282,390.

| | Fourth Quarter 1923 | Fourth Quarter 1922 |
|---|---|---|
| October | $18,600,197 | $8,566,354 |
| November | 17,286,551 | 9,663,351 |
| December | 14,072,232 | 9,332,687 |
| Total quarter earnings after deducting operating and maintenance expenses and estimated taxes | 49,958,980 | 27,552,392 |
| Depreciation and sinking fund | 13,041,684 | 12,182,563 |
| Net income | 36,917,296 | 15,369,829 |
| Interest and bond premiums | 4,813,123 | 5,039,465 |
| Balance | 32,104,173 | 10,330,364 |
| Balance of sundry receipts and charges | 235,189 | |
| Adjustments | | 952,982 |
| Balance | 32,339,362 | 11,283,346 |
| Preferred dividend | 6,304,920 | 6,304,920 |
| Common dividend | 6,353,782 | 6,353,782 |
| Surplus | 19,680,660 | *1,375,336 |

*Deficit

Unofficial earnings of the corporation for the year based on its quarterly statements were approximately $179,640,900, or $78,003,239 higher than the reported earnings of $101,637,661 in 1922. Quarterly earnings for the year after charging taxes, interest on bonds of subsidiary companies and all operating expenses follow:

| | 1923 | 1922 |
|---|---|---|
| First quarter | $34,780,069 | $27,552,392 |
| Second quarter | 47,858,181 | 27,468,339 |
| Third quarter | 47,053,680 | 27,286,945 |
| Fourth quarter | 49,948,980 | 19,339,985 |
| Total | $179,640,900 | $101,637,661 |

In an extended statement Judge Gary said the extra dividend was in compliance with the corporation's policy to consider the rights of all interested in the management and that the amount of net earnings over the last quarter, the present volume of business and unfilled orders on hand made the action justifiable. Replying to a question whether the eight-hour day had increased costs 10 per cent he said this increase probably would amount to $25,000,000, but the increase had not applied during the whole of the last quarter and as yet had not fully taken effect. He said it was natural for earnings to fall off in December as some railroads and steamship lines were not in full operation and there are other reasons. He said he believed business is all right if permitted to take its natural course and paid high tribute to the Washington administration.

# Missouri Rolling Mill Will Start Soon

Full operation is expected before March 1 by the Missouri Rolling Mill Corp., 6800 Manchester avenue, St. Louis, recently incorporated to manufacture reinforcing and other bars and with 3000 shares $100 par preferred stock and 25,000 shares no par common stock. All original stock is sold and additional stock issue as well as a $250,000 bond flotation are planned to provide more working capital.

The company will manufacture and sell steel reinforcing bars, iron and steel merchant bars and shapes from rerolling steel and from new billet steel. A 6-acre site upon which a rolling mill and auxiliary plants are built constitute the property of the company. Important items of the mill equipment are, electric motors throughout; one oil-fired continuous furnace, three oil-fired hand charged furnaces; two 14-inch three high mill trains of four stands each; one 9-inch three high mill train of four stands: locomotive crane, overhead cranes, etc. Capacity as now planned is 50,000 tons a year.

L. E. Fischer, consulting engineer, is president of the corporation and H. W. Danforth is vice president and treasurer. E. C. Scholl, for four years with the Calumet Steel Co. is general superintendent of the plant and John J. Hutchinson, for 13 years with the Calumet company is Mr. Scholl's assistant. E. A. C. Wahlers, formerly connected with the American Bridge Co. sales departments, is in charge of sales for the new company.

# Chicago Operation Gains

Chicago, Jan. 29.—Operations of the Illinois Steel Co. this week average 93 per cent of capacity. Increased activity is reflected in the fact that one week ago operations averaged 90 per cent, two weeks ago 83 per cent and three weeks ago 78 per cent. This company is blowing in a stack at its Joliet works, giving it 10 stacks active at Gary, 9 at South Works and 3 at Joliet, a total of 22 out of 27 stacks in this district. The Inland Steel Co. continues at about 75 per cent of capacity but as it bases its percentage on its total constructive capacity this means substantially full operation.

# Trade Statistics

**Gathering by Associations in Future in Doubt Under New Decision**

Washington, Jan. 29.—Under the present status of doubt in the gathering of statistics of production, shipments, sales and stocks of various products by trade associations for their respective industries, created by the recently expressed opinion of Attorney General Daugherty and interpreted to mean that this shall be confined exclusively to some government department hereafter, only one of three things can be done now. Either the department of commerce must collect the statistics, the trade associations must abandon entirely the collection of these statistics, or some legislation must be enacted allowing the collection of the figures. It is considered extremely doubtful that any legislation of this sort will be passed in the present session of congress.

No doubt exists but that the final outcome of the trade statistics question is a vital matter to the small business man, and that he will be placed at a great disadvantage if he is cut off from statistics. Considerable interest and anxiety has been manifested in the last several days. Five or six trade associations representatives have conferred with the solicitor of the department of commerce regarding interpretations of the supreme court decisions in the hardwood lumber and the linseed oil association cases.

No decision other than Attorney General Daugherty's opinion likely will be forthcoming for some time. Mr. Daugherty's opinion may not represent the ultimate legal definition of the trade association status, as the appeal of the cement association's dissolution decree to the United States Supreme Court will be a test case in the question of gathering statistics. The cement association appeal will be under the expedition act by which it goes directly to the Supreme Court from the federal district court by agreement of the government and the association, provided the previous testimony is reduced to narrative form. It is hoped that some court decision soon will clarify the trade statistics situation is a case where other legal points are not involved.

# Blow In New Stack

Chicago, Jan. 29.—The first of the two new stacks of the Royal Netherlands Blast Furnace & Steel Mfg. Co., near Amsterdam, Holland, was successfully blown in Jan. 22, according to a cablegram received by Freyn, Brassert & Co., Chicago. The plant, which was built under the supervision of Freyn, Brassert & Co., was described on pages 285 and 286 of IRON TRADE REVIEW of Jan. 24.

# Testimony Develops

**Importance of Bethlehem as Competition in Iron and Steel Business**

Further testimony in the suit of the federal trade commission for the dissolution of the Bethlehem Steel Corp. absorption of the Midvale and Lackawanna Steel companies has to do with the extent to which Bethlehem is a competitor for iron and steel business since the taking over of these companies.

Louis Stagg, sales manager, Snead & Co., Jersey City, but formerly purchasing agent, told of buying raw material for steel book racks and library equipment. He said he bought small angles, about 400 tons a year 25 per cent of this tonnage coming from warehouses. He pointed out where Bethlehem last summer failed to deliver as promised, forcing him to buy from warehouses. Cross examination showed that the Snead company generally maintained a six months' supply of material on hand, so the Bethlehem attorneys tried to show this delay was not harmful. It also was brought out that in the two years the Snead company placed nine orders with Bethlehem and eight orders were delivered on time. He said that prior to the merger, he bought only two carloads from Midvale in the two years.

Mr. Stagg said he bought 800 to 1000 tons of foundry pig iron a year, buying some from Bethlehem, one lot from Lackawanna Steel Co. and two cars of high silicon iron from Midvale. He also bought from other makers. Mr. Stagg said that about a year ago. Bethlehem Steel Co., Lackawanna Steel Co., Alan Wood Iron & Steel Co. and Eastern Steel Co. were eliminated as sources of supply.

**Names Spring Steel Needs**

H. C. Harrington, purchasing agent, Railway Steel Spring Co. said his company uses 40,000 tons of carbon spring steel annually, 80 per cent being obtained from the Carnegie and Illinois Steel companies. He stated that he gives Carnegie weekly rollings and gives Illinois a schedule of rolling every two weeks, generally obtaining delivery within two weeks of placing specifications. He said he bought 1000 tons of allov steel bars a year ago and gave Bethlehem a chance at that business, but that he bought only occasional odds and ends from this company and admitted Bethlehem received orders when material could not be obtained from regular sources. He said he had some hold-ups in deliveries from Bethlehem but they involved material which the Carnegie company had not been able to take. He said he never bought from the Lackawanna company.

Mr. Harrington said that he buys 25,000 to 50,000 tons of low phosphorus and basic iron a year, usually buying from Stewart Iron Co. or Colonial Iron Co. or from foreign sources. He said he never was solicited by the Bethlehem, Lackawanna or Midvale companies for his pig iron business.

George A. Prendergast, formerly New York district sales agent, Lackawanna Steel Co. told about the principal competition which his company had in the sale of bars, plates and shapes. He admitted, however, that 95 per cent of his information was hearsay, coming from purchasing agents, and admitted that the latter at times may have misled him.

## Extends Plant Capacity

The Ashtabula Steel Sheet Co., Ashtabula, O., has let contracts for the erection of a complete new finishing department, consisting of picklers, new cold-roll drive, new cranes, and other equipment to increase the department's efficiency. The company will be able, at the completion of this new addition, to enter the automobile or high finish sheet field. The company has been running to full capacity since the Davey organization took over control of the plant. It is sold up for the first quarter.

## Ship Few Locomotives

Washington, Jan. 29.—Of 37 locomotives shipped from the United States in December, 26 were steam driven and 11 electric. Japan imported three steam, three railway electrics and seven industrial electrics. Canada received four steam and one electric industrial locomotive. Other countries receiving steam locomotives were: Brazil, eight, Colombia, four, Cuba, four, Chile, British Honduras and Dominican Republic, one each.

## Build Employes Homes

Pittsburgh, Jan. 29.—The Blaw-Knox Co. has let a contract for 100 houses at Blawnox, Pa., which will involve an investment of about $400,000. With the completion of these houses, the company will have about 200 homes, all of which are occupied by its employes.

## Scrap Moving Actively

(*Concluded from page 322*)

measure is due to activity of dealers and the influence of the Mahoning valley market. The latter is exceptionally strong because of scarcity of material and the readiness with which tonnage is picked up when offered. Cleveland users have fairly good stocks, particularly of heavy melting steel and are doing little buying. Shipments are being accepted without interruption. Prices have advanced an average of 50 cents a ton the past week, heavy melting steel now being quoted $19.50 to $20.50; machine shop turnings, $16.25 to $16.50; cast iron borings, $17.25 to $17.50; bundled sheets, $15 to $15.25; hydraulic compressed sheets, $18 to $18.50; No. 1 cast, $22 to $22.50; heavy cast, $17.50 to $17.75.

**Active, Higher in East**

Philadelphia, Jan. 29.—More than 30,000 tons of heavy melting steel have been sold in the past week, one consumer taking 20,000 tons and another 10,000 tons. All this material went at $20, delivered. While this price was paid for these large lots, smaller lots of a few hundred tons have been moving at $18 to $19. Chemical borings have sold at $18.50, low phosphorus at $25, blast furnace boring and turnings at $16. Mills have bid $16 for turnings but dealers hold for higher prices. The list generally has advanced materially in the past few days.

**Cincinnati Holds Strength**

Cincinnati, Jan. 29.—Strength of the iron and steel scrap market continues. New buying by mills is confined to small lots well distributed among the various grades. Dealers have been shipping to the valleys, where they realize better prices. Heavy melting, steel, turnings, malleable and cast grades in some instances are in best demand, while one consumer in the Portsmouth district the past week ordered shipments held up. While most dealers are asking $17.50 to $18.00 for heavy melting steel several are filling old contracts on a basis of $16, f.o.b. consuming points. Prices have been marked up on a few grades, although for the most part quotations are firm at previous schedules.

**Prices Moving Upward**

St. Louis, Jan. 29.—The market for iron and steel scrap continues its upward trend, and additional advances have been made. The industries need scrap and are buying, though only in small amounts. Dealers are looking for further advances, and are not pressing for sales. Old car wheels are wanted, and were marked up $1 a ton. Cast grades generally are firm, with grate bars and stove plate higher.

Offerings are moderate. Lists before the trade included a blank one by the Big Four and 1000 tons of relaying rails; Missouri Pacific, 60 car loads; Kansas City Terminal, 400 tons and Chicago, Burlington and Quincy, 3500 tons. About 800 tons in all were offered by other small roads.

**Little Movement South**

Birmingham, Ala., Jan. 29.—Iron and steel scrap in the South is not showing the same improvement as other centers, as the largest consumer of heavy melting steel is fixing its own price. Stove plate is in fairly good demand and No. 1 cast is being purchased by cast iron pipe makers. Melting steel lags. Quotations show no change except in turnings and borings and this fluctuation is rather modest. Stove plate is being purchased by the brake shoe concern.

# British Strike Restraint Ends

## Weeks Will be Required to Clear Freight Congestion Resulting From Strike —Iron and Steel Industry Slowed Ten Per Cent and Fifteen Furnaces Banked—Prices Cut by German and Belgian Makers

***Iron Trade Review Staff Cable***

European Headquarters,
IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, Jan. 29.—Settlement of the strike of locomotive firemen on British railroads relieves the iron and steel industry of the restraint that has been imposed on it by lack of adequate transportation of raw and finished material, though several weeks will be necessary to clear the freight congestion which has resulted from the labor situation. The iron and steel industry in Great Britain has been slowed about 10 per cent by the strike and 15 furnaces have been damped down, including two producing ferromanganese.

Markets for iron and steel are inactive as overseas buyers are turning to the continent where prices are a trifle better, fearing delay in delivery from British furnaces and mills. Much cutting continues in all lines on the part of continental producers in spite of lack of competition from makers in this country. German producers have sold pig iron at £4 5s ($18.10) and Belgian mills have taken orders for bars and beams at £6 5s ($26.62) f.o.b. shipping port.

English sheet and tin plate prices are firmer and show considerable strength. Owners of tin mills have abandoned the scheme under consideration for a central selling agency for the whole trade but the Thomas interests now control the selling of half the British output.

Export furnace coke is quoted at £1 14s ($7.24).

Sterling exchange is figured on a basis of $4.26.

# Belgian Steel Prices Hurt British Business

***European Staff Special***

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Jan. 11.—The first quarterly meeting of the year held at Birmingham yesterday was on the whole favorable, and afforded indications as to the prospect of business. The prevalent sentiment is one of caution to which the political situation is commonly said to contribute. As there will be a labor government manufacturers are nervous on what is described as a menace to trading interests.

The more obvious explanation of the caution is the formidable character of foreign competition. The Birmingham meeting was attended by many representatives of Belgian steelworks, with prices impossible to British makers. They stated candidly the low prices are possible solely because of the low international franc value. Belgian billets were quoted at £7 2s 6d ($30.56) and even £7 ($30.03) was said to have been accepted. This had a weakening effect on prices of English steel billets, now quoted at £8 5s delivered ($35.39) a fall of 5s ($1.07) for the week. Bars at £10 15s ($46.11) are subject to competition from Belgian material at £7 2s 6d ($30.56) f.o.b. Antwerp or £8 5s ($35.39) delivered here. British exporters are taking advantage of this to execute foreign orders, shipping the steel from Antwerp direct to Eastern or South American destinations. One offer received in Birmingham this week quotes Belgian plates 3/16 inch thick at £8 3s ($34.95) f.o.b. Antwerp equal to £9 8s 6d ($40.41) delivered. The English prices for this material, including an extra charge for thickness not demanded by the Belgians is £11 15s ($50.40) to £12 ($51.48).

**Sterling—$4.29**

Shipbuilding improvement has stimulated the nut and bolt trade and the establishment of a large combine, making available the latest modern plant and better shipping facilities, has enabled the trade to cope with this business more favorably than heretofore. But foreign competition is bringing in cheap Belgian material. Belgian No. 3 bars were quoted on change £8 11s ($36.67) delivered, a reduction of 4s ($0.84) on the week. This has not prevented the Lancashire makers from putting up the prices of their bars from £11 ($47.19) to £11 10s ($49.33). The reason assigned is the rise of 1s ($0.21) per ton in works coal and about 4s ($0.84) to 5s ($1.07) on forge pig iron, which compels higher prices to be charged. This addition to costs is shared equally by Staffordshire makers whose prices are firm, with an upward tendency.

This increase is attributed to the largest order placed for some time in Middlesbrough, which is locally regarded as a windfall. Cochrane & Co. of the Ormesby Iron Works have a contract to supply 60,000 tons of cast iron tunnel plate segments for the lining of the new Wimbledon tube on the City & South London railway. The Cochrane firm is casting the segments at its foundries and will ship them direct from its wharves at the rate of 1500 tons per week to various London depots as required.

The same company has an order to supply 6½ miles of 24-inch cast iron pipe for the Tees valley water board, an order which will call for about 4000 tons.

Midland pig iron prices are unchanged. Some makers have added 2s 6d ($0.53) to quotations to cover extra fuel costs, but it does not appear this has been paid and Derbyshire foundry iron can still be bought at £4 5s ($20.37) with Northampton at £4 12s 6d ($19.84).

Tin plate mills maintain good production, the high price of tin being sufficient to keep prices firm. Most makers insist on a minimum of £1 4s 3d ($5.19). Continental demand is expanding with France, Spain and Italy prominent buyers. Indian and Far Eastern orders are restricted to moderate tonnages.

Sheet mills have good reserves of orders, additional plants continually being brought into operation. A slight lull in buying has weakened prices, £18 10s ($79.36) now being accepted. The black sheet trade is expanding, automobile requirements calling for good tonnages. The new quarter's price for lead-coated sheets of 20 gage is £28 ($120.12). At the Birmingham quarterly meeting the Tinned Sheet Manufacturers' association fixed prices for best charcoal sheets at £58 ($248.82) per ton, charcoal £56 ($240.24) and unassorted £52 ($223.08), all on the 20 gage basis.

## Spanish Outlook Better

Washington, Jan. 29.—Outlook for the iron and steel industry in Spain is more optimistic, due to unfilled orders covering 10 months' productive activity, and conditions at Bilbao have been helped considerably by improved British demand for Spanish iron ore, according to consular information received by the department of commerce. Ex-

# Current Iron and Steel Prices of Europe

**Last Reported Prices Converted into Dollars at Rates of Exchange, January 28**

## British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace

| | $ | £ s d |
|---|---|---|
| **SEMIFINISHED STEEL** | | |
| Billets, soft steel | 35.95 | 7 10 0 |
| Sheet bars | 35.95 | 7 10 0 |
| Wire rods | 46.86 | 11 0 0 |
| **FINISHED STEEL** | | |
| Steel bars, England, ⅝ to 3-inch | 41.54 | 9 15 0 |
| Steel bars, England, ⅜ to 3-inch, for export | 40.47 | 9 10 0 |
| Plates, ship, bridge and tank, England | 40.47 | 9 10 0 |
| Plates, ship, bridge and tank, England, for export | 38.34 | 9 0 0 |
| Plates, ship, bridge and tank, Scotland | 40.47 | 9 10 0 |
| Plates, ship, bridge and tank, Scotland, for export | 38.34 | 9 0 0 |
| Beams, England | 40.47 | 9 10 0 |
| Beams, England, for export | 38.34 | 9 0 0 |
| Beams, Scotland | 40.47 | 9 10 0 |
| Beams, Scotland, for export | 38.34 | 9 0 0 |
| Sheets, black, 24 gage | 58.58 | 13 15 0 |
| Sheets, black, 24 gage, for export | 56.45 | 13 5 0 |
| Sheets, galvanized, 24 gage | 78.28 | 18 7 6 |
| Rails, 60 pounds and over | 38.34 | 9 0 0 |
| Rails, 60 pounds and over, for export | 37.28 | 8 15 0 |
| Tin plate, base box 108 pounds | 5.17 | 1 4 3 |
| Steel hoops | 51.12 | 12 0 0 |
| Steel hoops, for export | 47.93 | 11 5 0 |
| **PIG IRON** | | |
| Hematite, East Coast, Mixed Numbers | 21.30 | 5 0 0 |
| Hematite, West Coast, Mixed Numbers | 22.90 | 5 7 6 |
| Basic, Middlesbrough | 20.24 | 4 15 0 |
| No. 3 Foundry, Middlesbrough | 21.09 | 4 19 0 |
| No. 3 Foundry, Derby, Leicester, Nottingham | 20.24 | 4 15 0 |
| No. 3 Foundry, Northamptonshire | 19.70 | 4 12 6 |
| No. 3 Foundry, Staffordshire | 20.24 | 4 15 0 |
| No. 3 Foundry, Scotch | 22.37 | 5 5 0 |
| Ferromanganese, 76 to 80 per cent | 76.42 | 17 0 0 |
| **COKE** | | |
| Yorkshire furnace | 5.75 | 1 7 0 |
| Yorkshire furnace, for export | 7.24 | 1 14 0 |
| Welsh foundry | 6.92 | 1 12 6 |
| Welsh foundry, for export | 8.52 | 2 0 0 |

Where no separate export prices are given, same quotations apply to domestic and foreign business.

## German Market

Prices Last Reported

| | $ | Pounds per metric ton (2205 lbs.) |
|---|---|---|
| **PIG IRON** | | |
| Hematite | 24.71* | 5 16 0 |
| Foundry, No. 3 | 24.71 | 5 16 0 |
| Stahleisen, Siegen | 26.63 | 6 5 0 |
| Foundry, No. 1 | 24.71 | 5 16 0 |
| Luxemburg Foundry, No. 3 | | Nominal |
| **COKE** | | |
| Lower Silesian furnace | 8.82 | 2 1 5 |
| Lower Silesian foundry | 8.82 | 2 1 5 |
| **SEMIFINISHED STEEL** | | |
| Billets | | Nominal |
| Sheets bars | | Nominal |
| Wire rods | 38.34 | 9 0 0 |
| **FINISHED STEEL** | | |
| Standard rails | 34.08 | 8 0 0 |
| Merchant bars | 34.89 | 7 5 0 |
| Structural shapes | 35.95 | 7 10 0 |
| Ship plates | 34.08 | 8 0 0 |
| Medium plates, 3 to 5 millimeters | 38.34 | 9 0 0 |
| Sheets, 1 to 3 millimeters | 38.34 | 9 0 0 |
| Tin plate, per box of 575 kilograms | 7.85 | 1 16 10 |
| Plain wire | 55.38 | 13 10 0 |
| Bands and strips | 42.60 | 10 0 0 |

All prices are f.o.b. furnace or mill.
*German prices now are quoted in pounds, sterling.

## French Market

Prices Last Reported

| | $ | Francs per metric ton (2205 lbs.) |
|---|---|---|
| **PIG IRON** | | |
| Hematite, Lorraine | 20.42 | 440 |
| Basic bessemer, Lorraine | 18.10 | 390 |
| Foundry, Longwy, No. 3, sand-cast | 17.63 | 380 |
| Foundry, Longwy, No. 3, chill-cast | 18.10 | 390 |
| Ferromanganese, 76 to 80 per cent | 71.92 | 1,550 |
| **COKE** | | |
| French furnace | 6.73 | 145 |
| German furnace, f.o.b. frontier* | 10.21 | 220 |
| German furnace, f.o.b. frontier** | 10.81 | 233 |
| French foundry | 7.42 | 160 |
| **SEMIFINISHED STEEL** | | |
| Blooms | 21.81 | 470 |
| Billets | 22.97 | 495 |
| Sheet bars | 23.90 | 515 |
| **FINISHED STEEL** | | |
| Standard rails | 25.29 | 545 |
| Merchant bars | 26.45 | 570 |
| Angles | 25.75 | 555 |
| Normal beams and profiles | 25.75 | 555 |
| Plates, ship and tank, 10 millimeters and thicker | 29.46 | 635 |
| Plates, bridge and tank, 5 to 10 millimeters | 30.62 | 660 |
| Sheets, black, 3 millimeters | 32.48 | 700 |
| Sheets, blue annealed, 2 millimeters | 36.19 | 780 |
| Shafting, cold-drawn, 40 to 60 millimeters | 53.36 | 1,150 |
| Bars, 2 per cent nickel steel | 82.36 | 1,775 |

All prices are f.o.b. furnace or works.
*Up to 50 per cent of normal requirements.
**Over 50 per cent of normal requirements

## Belgian Market

Prices Last Reported

| | $ | Francs per metric ton (2205 lbs.) |
|---|---|---|
| **PIG IRON** | | |
| Basic bessemer, Belgian | 16.95 | 410 |
| Basic open-hearth, Belgian | 17.78 | 430 |
| Gray forge, Belgian | 16.54 | 400 |
| Foundry, No. 3, Belgian | 17.57 | 425 |
| Foundry, No. 3, Luxemburg | 17.16 | 415 |
| Foundry, No. 3, Lorraine | 17.57 | 425 |
| **SEMIFINISHED STEEL** | | |
| Blooms | 22.33 | 540 |
| Billets | 23.36 | 565 |
| Sheet bars | 24.19 | 585 |
| Wire rods | 34.11 | 825 |
| **FINISHED STEEL** | | |
| Standard rails | 28.95 | 700 |
| Merchant bars | 27.91 | 675 |
| Normal beams and profiles | 25.84 | 625 |
| Plates, 5 millimeters and thicker | 30.19 | 730 |
| Sheets, black, 3 millimeters | 32.67 | 790 |
| Sheets, galvanized, 1 millimeter | 57.53 | 1,875 |
| Plain wire | 49.62 | 1,200 |
| Galvanized wire | 62.03 | 1,500 |
| Wire nails | 51.69 | 1,250 |

All prices are f.o.b. furnace or works.

pected orders for railroad materials indicate possible opportunities for American business, it is pointed out. A large gain is shown in the number of iron ore concessions granted by the government. Propagation of the present arrangement of a 15 per cent surtax on railroad freight rates in Spain, instead of a final decision concerning the Spanish railroad systems, is unfavorable for the railroads despite the increases in earnings in 1923 over 1922, it is said.

# Form Selling Syndicate for Belgium

***European Staff Special***

BRUSSELS, Jan. 11.—Little activity is noted in the Belgian iron and steel market. Mills and furnaces still have orders, but will soon be in need of new business. Buyers are now being solicited and price concessions are offered. There is keen competition on the part of Lorraine and Luxembourg producers. Westphalian mills are competing in the Belgian market, and future German competition generally is being feared in the home market as well as in export markets.

(Franc—$0.045)

It is reported negotiations are near for the organization of a *Comptoir des Acieries Belges* or steel selling syndicate. Before the war a combination of this kind had proved serviceable and it seems that a similar organization is favored in certain circles. On the other hand, the *Syndicat Belge des Cokes,* which controlled the price of furnace coke is now dissolved.

A few foundry and hematite pig orders have been taken. The present sterling rates are in favor of Belgian export trade to England. Semifinished steel is calm and prices are unchanged. English users are inquiring heavily.

# Exports, Imports Gain in 1923

## Shipments Increase Approximately 10 Per Cent Over 1922—December Exports Drop But Continue at High Level—Imports Gain Slightly As More Pig Iron Is Received—Black Sheets Steel Largest Tonnage Shipped

FOREIGN trade by the United States in iron and steel products in 1923 was more active than in the year preceding, exports in the year just ended totaling 2,034,786 tons and imports amounting to 733,776 tons. Starting the year 1923 the low point in exports was passed in January, succeeding months increasing until the peak was reached in May, when 195,535 tons was shipped from the country. A period of dullness during the summer was followed by sharp increases in the fall, November exports totaling 189,142 tons and December shipments amounting to 181,932 tons.

Exports in 1923 showed a gain of 10 per cent over those in 1922. The largest single item exported during 1923 was light rails, 239,364 tons being shipped. Fabricated structural shapes exported during 1923 totaled 33,663 tons as compared to 21,984 tons in 1922. Plain structural shapes showed one of the largest gains, shipments for the year just ended almost doubling those of 1922.

Pig iron exports during the last two years were about on a par, 1912 shipments totaling 30,920 tons against 32,318 tons for the succeeding year. Iron and steel scrap showed a similar uniformity, 1922 exports being 64,784 tons and those of 1923 being 65,678 tons. Although black sheets for the year 1923 did not approximate a larger total than the year preceding, December shipments of this material were the largest single item exported, a total of 36,642 tons being shipped as compared with 17,188 tons in November and 5477 tons in December, 1922. This sudden increase is largely due to the great demands made upon exporters for Japanese requirements.

Ferromanganese and spiegeleisen exports in 1923 totaled 4295 tons as compared with 1107 tons in 1922. Other materials showing increase in 1923 over that of the preceding year are horseshoe nails, insulated wire and cable, wire rope and cable, wire cloth and screening, woven wire fencing, plain wire, cast iron pipe fittings, malleable iron pipe fittings, welded black pipe and oil line pipe, boiler tubes, railroad spikes, tin and terne plate, cold rolled strips, black sheets iron, galvanized sheets and semifinished. Few decreases were noted, among which were black sheets steel, hoops, bands and scroll, miscellaneous structural forms, light rails, welded galvanized pipe, cast iron pipe, galvanized wire, and cut nails. Tungsten and manganese ore exports in 1923 totaled 1078 tons.

Imports of pig iron during 1923 totaled 367,820 tons as compared with 383,445 tons in 1922. Ferromanganese and ferrosilicon also showed decreases from 1922 to 1923, the former receipts dropping from 94,658 tons to 88,570 tons and the latter from 14,492 tons to 11,742 tons. Tin plate imports showed the largest single item increase, shipments received in 1922 totaling 2682 tons, as compared to 10,033 tons in 1923.

The years 1922 and 1923 are not strictly comparable because of the re-

**IMPORTS AND EXPORTS**
**Gross Tons**

| | 1923 | | 1922 | |
|---|---|---|---|---|
| | Imports | Exports | Imports | Exports |
| Jan. | 119,955 | 135,046 | 13,404 | 165,962 |
| Feb. | 67,682 | 136,853 | 11,535 | 133,333 |
| March | 106,050 | 168,176 | 12,774 | 206,474 |
| April | 77,794 | 183,905 | 18,720 | 197,562 |
| May | 75,840 | 195,535 | 23,098 | 229,616 |
| June | 67,968 | 176,403 | 39,154 | 216,298 |
| July | 53,451 | 170,259 | 56,425 | 161,204 |
| Aug. | 45,612 | 163,010 | 49,054 | 144,264 |
| Sept. | 36,562 | 175,429 | 76,378 | 128,370 |
| Oct. | 29,556 | 154,887 | 174,764 | 138,887 |
| Nov. | 26,294 | 189,142 | 141,249 | 129,647 |
| Dec. | 26,995 | 181,932 | 96,340 | 153,483 |
| Total | 733,776 | 2,034,786 | 702,476 | 1,827,486 |

| Year | Imports | Exports |
|---|---|---|
| 1921 | 135,825 | 2,150,276 |
| 1920 | 421,274 | 4,934,087 |
| 1919 | 322,264 | 4,397,295 |
| 1918 | 169,110 | 5,338,019 |
| 1917 | 330,201 | 6,465,053 |
| 1916 | 328,965 | 6,110,732 |
| 1915 | 282,396 | 3,532,564 |
| 1914 | 289,775 | 1,549,554 |
| 1913 | 317,260 | 2,745,635 |

**IRON AND STEEL EXPORTS**
**Gross Tons**

| | December | | Twelve months ended December | |
|---|---|---|---|---|
| | 1923 | 1922 | 1923 | 1922 |
| Pig iron | 2,750 | 3,136 | 32,318 | 30,920 |
| Iron and steel scrap | 5,111 | 2,761 | 65,678 | 64,784 |
| Semifinished | 4,583 | 7,973 | 111,881 | 93,304 |
| Iron bars | 343 | 14,123 | 12,689 | |
| Steel bars | 11,000 | | 158,319 | |
| Wire rods | 6,490 | 1,498 | 40,868 | 40,423 |
| Boiler plate | 1,654 | 534 | 13,086 | 12,369 |
| Other plates | 5,380 | 10,766 | 102,374 | 88,616 |
| Galvanized sheets | 7,376 | 6,636 | 114,751 | 109,320 |
| Black sheets, steel | 36,642 | 5,477 | 139,105 | 214,916 |
| Black sheets, iron | 640 | 990 | 14,158 | 11,693 |
| Cold rolled strips | 715 | 482 | 11,472 | 5,290 |
| Hoops, bands and scroll | 1,221 | 3,274 | 26,771 | 29,220 |
| Tin and terne plate | 17,609 | 6,513 | 123,470 | 81,098 |
| Structural shapes, plain | 6,078 | 12,510 | 122,062 | 69,693 |
| Structural shapes, fabricated | 978 | 3,211 | 33,663 | 21,984 |
| Ship and tank plates, punched and shaped | 105 | 147 | 2,930 | 2,501 |
| Metal lath | 146 | ** | 1,493 | ** |
| Other structural forms | 2,574 | 6,741 | 41,803 | 75,908 |
| Rails over 50 pounds | 18,179 | 16,160 | 239,364 | 246,700 |
| Rails under 50 pounds | 3,386 | 1,361 | 28,045 | 30,390 |
| Rails, joints, etc | 1,663 | 1,689 | 22,743 | 21,759 |
| Switches, frogs, etc | 840 | 816 | 5,688 | 6,316 |
| R. R. spikes | 656 | 641 | 8,598 | 7,895 |
| R. R. bolts, nuts, etc | 120 | 220 | 2,562 | 2,327 |
| Boiler tubes | 1,088 | 1,135 | 16,517 | 12,073 |
| Casing and oil line pipe | 6,750 | 6,187 | 63,640 | 51,726 |
| Welded black pipe | 5,064 | 6,707 | 76,590 | 75,073 |
| Welded galvanized pipe | 2,144 | 2,903 | 28,680 | 32,468 |
| Mal'ble iron pipe fittings | 375 | 439 | 8,231 | 7,848 |
| Cast iron pipe | 970 | 1,281 | 15,308 | 18,001 |
| Cast iron pipe fittings | 862 | 1,300 | 12,753 | 9,301 |
| Plain wire | 2,490 | 3,083 | 38,551 | 35,959 |
| Galvanized wire | 4,771 | 4,377 | 53,679 | 77,191 |
| Barbed wire | 5,573 | 4,987 | 70,803 | 70,827 |
| Woven wire fencing | 138 | 254 | 4,043 | 2,794 |
| Wire cloth and screening | 137 | 108 | 1,960 | 1,527 |
| Wire rope and cable | 422 | 379 | 6,256 | 4,583 |
| Insulated wire and cable | 104 | 49 | 1,450 | 905 |
| Other wire | 1,113 | 1,281 | 14,571 | 15,880 |
| Cut nails | 93 | 176 | 2,300 | 3,509 |
| Wire nails | 6,490 | 2,814 | 45,981 | 55,020 |
| Horseshoe nails | 80 | 79 | 1,114 | 796 |
| Other nails | 457 | 325 | 5,345 | 4,053 |
| Bolts, nuts, rivets, etc | 1,402 | 1,588 | 18,907 | 18,325 |
| Horseshoes | 89 | 115 | 950 | 988 |
| Other iron and steel | 5,079 | 6,018 | 66,175 | 59,417 |
| Ferromanganese and Spiegeleisen | 2 | 43 | 4,295 | 1,107 |
| Ferrosilicon | .... | 196 | 814 | 689 |
| Total | 181,932 | 153,483 | 2,034,786 | 1,827,486 |

*Includes ingots, blooms, billets, slabs and skelp, sheet and tin plate bars.

**Due to reclassification, comparisons are not possible.

**CASTINGS AND FORGINGS EXPORTS**
**Gross Tons**

| | December | | Twelve months ended Dec. | |
|---|---|---|---|---|
| | 1923 | 1922 | 1923 | 1922 |
| Iron castings | 827 | 955 | 10,045 | 10,189 |
| Steel castings | 321 | 170 | 4,725 | 2,039 |
| Car wheels and axles | 973 | 1,888 | 20,593 | 17,555 |
| Iron and steel forg'gs | 196 | 173 | 3,019 | 2,342 |
| Total | 2,217 | 3,186 | 38,382 | 32,125 |

**FERROALLOY EXPORTS**
**Gross Tons**

| | December | | Twelve months ended Dec. | |
|---|---|---|---|---|
| | 1923 | 1922 | 1923 | 1922 |
| Ferrosilicon | .... | 196 | 814 | 689 |
| Ferromang. and spiegeleisen | 2 | 43 | 4,295 | 1,107 |
| Tungsten, manganese and other ores | 146 | .... | 1,078 | .... |
| Ferrotungsten, tungsten metal and wire | .... | .... | 2 | ..... |
| Other ferroalloys | 4 | 32 | 107 | 594 |
| Ferrovanadium | 6 | .... | 23 | 22 |

classification of various materials beginning Sept. 22, 1922. December imports of pig iron totalled 12,355 tons as compared with 9299 tons in November, and was the largest month since August. Iron ore imports in 1923 more than doubled those of the year preceding, 2,768,430 tons being received in the year just ended as compared with 1,135,156 tons in 1922.

**PIG IRON IMPORTS**

Gross Tons

| From:— | |
|---|---|
| Belgium | 1,050 |
| England | 4,725 |
| Scotland | 80 |
| Quebec-Ontario | 3,286 |
| British-India | 2,672 |
| China | 500 |
| British Columbia | 42 |
| Total | 12,355 |

**IRON ORE IMPORTS**

Gross Tons

| From: | December 1923 | December 1922 | Twelve months ending December 1923 | Twelve months ending December 1922 |
|---|---|---|---|---|
| Spain | .... | 181 | 214,891 | 47,111 |
| Sweden | 24,336 | 22,386 | 749,765 | 317,539 |
| Canada | 7 | 317 | 24,710 | 2,840 |
| Cuba | 32,300 | 60,100 | 692,979 | 381,746 |
| Other c'tries | 100,547 | 84,237 | 1,086,085 | 385,920 |
| Total | 157,190 | 167,221 | 2,768,430 | 1,135,156 |

Sweden led all countries in 1923 as an exporter of iron ore with shipments from that country totaling 749,765 tons. In 1922 Cuba was the largest exporter of this material with a total of 381,746 tons. In December 157,190 tons of iron ore was imported, 32,300 tons coming from Cuba, 24,336 tons from Sweden, 7 tons from Canada and the rest from other countries.

Imports of manganese ore in 1923 fell off considerably, the total received amounting to 196,986 tons. Due to reclassification, 1922 is not comparable with the year just ended, but for the first 11 months of that year 366,146 tons was imported. Nickel ore was the only one of the various ores listed to increase imports during 1923 when 6519 tons was received as compared with 1378 tons of 1922.

**IRON AND STEEL IMPORTS**

Gross Tons

| | December 1923 | December 1922 | Twelve months ended Dec. 1923 | Twelve months ended Dec. 1922 |
|---|---|---|---|---|
| Pig iron | 12,355 | 54,728 | 367,820 | 383,445 |
| Ferromanganese | 1,907 | 5,151 | 88,570 | 94,658 |
| Ferrosilicon | 401 | 1,053 | 11,742 | 14,492 |
| Scrap | 4,500 | 28,602 | 162,026 | 142,969 |
| Bar iron | 393 | 1,171 | 7,753 | 8,091 |
| Steel ingots, bars, etc. | 2,300 | 1,760 | 22,671 | 27,719 |
| Structural shapes | 1,627 | 1,448 | 10,673 | 8,269 |
| Rails | 937 | 992 | 29,712 | 4,772 |
| Boiler and other plates | 106 | 147 | 1,819 | 1,567 |
| Sheets and saw plates | 264 | 17 | 2,754 | *380 |
| Tin plate | 186 | 347 | 10,033 | 2,682 |
| Wire rods | 338 | 277 | 3,950 | 1,726 |
| Total | 25,314 | 95,693 | 719,523 | 690,770 |

**OTHER IMPORTS**

Gross Tons

| | December 1923 | December 1922 | Twelve months ended Dec. 1923 | Twelve months ended Dec. 1922 |
|---|---|---|---|---|
| Tubular products | 800 | 265 | 4,960 | *10,105 |
| Round iron and steel wire | 278 | 136 | 3,753 | *648 |
| Castings and forgings | 246 | 81 | 2,750 | *403 |
| Nails and screws | 78 | 84 | 1,093 | *220 |
| Nuts, bolts, rivets, etc. | 13 | 15 | 215 | *50 |
| Flat wire and strip steel | 266 | 66 | 1,482 | *280 |
| Grand total | 26,995 | 96,340 | 733,776 | 702,476 |

*Beginning Sept. 22, 1923.

## Form Steel Association

Washington, Jan. 29.—Australian steel producers have formed an association to promote trade interests and bring about closer co-operation, according to information received by the bureau of foreign and domestic commerce. It is known as the bureau of Iron and Steel Manufacturers, with general headquarters located at Melbourne.

Objects of the bureau are set forth in an official statement and include promotion and projection of trade interests of steel manufacturers of Australia and generally to bring about a closer co-operation for acquirement and interchange of knowledge. While membership at first has been restricted to direct steel producers, the question of admitting makers of semi-steel and other allied interests to participation in the association will be discussed later.

**FERROMANGANESE AND MANGANESE ORE IMPORTS**

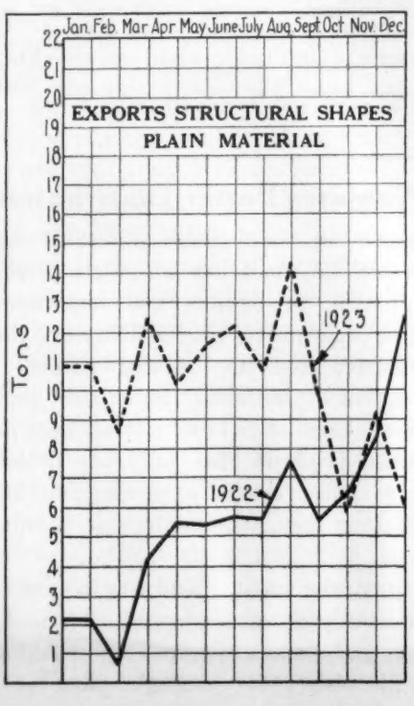
Gross Tons

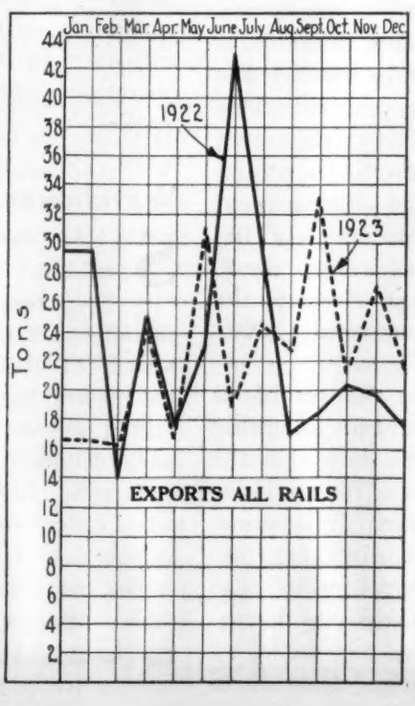
| Manganese ore from: | Dec., 1923 |
|---|---|
| Netherlands | 16 |
| Turkey-in-Europe | 5,934 |
| Brazil | 32 |
| Chile | 405 |
| British India | 5,616 |
| Total | 12,003 |
| Ferromanganese from:— | |
| England | 1,907 |
| Total | 1,907 |

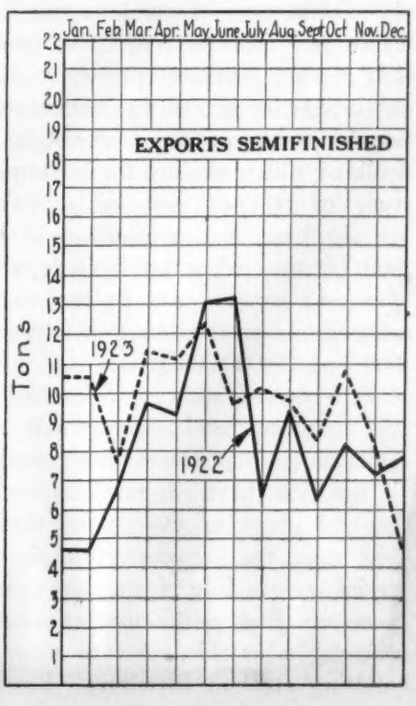
**IMPORTS OF VARIOUS ORES AND FERROALLOYS**

| | December 1923 | December 1922 | Twelve months ended Dec. 1923 | Twelve months ended Dec. 1922 |
|---|---|---|---|---|
| Ferromanganese | 1,907 | 5,502 | 88,057 | 94,658 |
| Ferrosilicon | 401 | 1,053 | 11,742 | 14,492 |
| Manganese ore | 12,003 | 18,305 | 196,986 | *46,724 |
| Tungsten bearing ore | .... | .... | ..... | *21,840 |
| Nickel ore | 528 | 983 | 6,519 | 1,378 |
| Total | 14,839 | 25,843 | 303,304 | 179,102 |

*Beginning Sept. 22, 1922.



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## Is Scrap Becoming Scarcer?

RECENT instances where heavy melting steel scrap has sold above basic pig iron raised an interesting speculation as to the adequacy of future supplies of old material both with regard to their market significance and to their bearing upon steel production.

Last year the country produced approximately 44,800,000 tons of steel in the form of ingots and castings. Generalizing from previous years it is fair to say that 80 per cent of this was by the open-hearth or scrap consuming process. This would mean at least 36,000,000 tons, the great bulk of which was by the basic method. On a mixture of 50 per cent of scrap and 50 per cent of pig iron, a consumption of approximately 18,000,000 tons of scrap is indicated at a ratio of 40 per cent of pig iron to 60 per cent of scrap, the absorption of the latter would be between 19,000,000 and 20,000,000 tons.

It requires only a reference to the record of ruling prices of basic pig iron and heavy melting steel at leading consuming points to show that the latter has been a relatively cheap material for several years or ever since the war. It is possible that the increased supply of discarded material originating from war purposes which has been coming on the market since 1918 may be accountable for this. At any rate, the price of heavy melting steel at Pittsburgh has ranged from $5 to $25 a ton during that period. This condition unquestionably has operated to increase the proportion of scrap used in steelworks mixtures as against pig iron. In fact, practices have been developed in recent years whereby certain works have been producing finished steel from an all-scrap mixture.

With declining steelworks operations over the last six months of 1923 there was little change in the general price trend. When the turn came in December, however, scrap rose more rapidly than pig iron and as stated in some cases in the Pittsburgh and valley districts has exceeded the price of the furnace product.

Because Pittsburgh and the valleys must draw upon outside territory for their supplies of scrap, since their production is insufficient for their own needs, it is suggested that the relatively rapid rise in scrap in those territories may be due to special conditions. However, an examination of the ruling prices at Chicago and eastern Pennsylvania likewise show a contraction of the margin of market prices between heavy melting steel and basic pig iron. This tends to indicate a lessened volume of scrap supplies in proportion to steel production since it has been repeatedly pointed out that scrap has no intrinsic worth and that its value is determined entirely by what consumers will pay for it at a given time.

If scrap is becoming relatively scarcer as the indications suggest this condition promises to increase, considering the accelerated way the open-hearth process continues to expand compared with other methods. It is a question whether the supply of scrap or discarded material coming back for reuse increases in the same proportion as industrial activity, as measured by steel production, grows. Apparently it does not. As the years go on, a proportionate shrinkage of scrap, especially steel scrap will have an important influence upon steelmaking operations and also upon the scrap and pig iron market.

## Warehouse Promotes Better Distribution

STEEL warehouses, in reality retail stores for distribution of steel in small lots or single pieces, have been growing in number and importance recently to a degree that proves the stability of this branch of the industry and its essential nature in the present organization of business. Since steel mills find it impossible to keep stocks of myriad sections and analyses of steel products they sell only in lots sufficiently large to offer quantity production and when orders are lacking they pare production in equal degree.

The warehouse, on the other hand, orders stock from mills in a steady stream, depending on demand, places it on its shelves, figuratively speaking, and is ready to fill orders for a single piece or a

carload. It does some cutting to length and small fabricating work. It thus serves the small user whose requirements are not attractive to the mill and provides a source of supply in an emergency for the larger user who needs steel to fill in.

Various established warehousing companies in recent years have been starting new branches or have been taking over other companies to give a wider spread of service. These extensions reflect faith in the future and in the function of the jobber in the scheme of iron and steel distribution. This is becoming more apparent each year. In some cases mills have found it expedient to distribute some products for special consuming requirements through jobbers rather that direct from their own mills. This has tended to expand store facilities rapidly. Additionally several steel producers maintain their own warehouses at natural distribution points, to give immediate shipment in small lots when customers are in need of such service. The consumer thus is being served better as years pass and he need not wait for material to the degree necessary in the past in times of unusual demand on mills.

## Fabricators Launch Worthy Campaign

LAST week at Pittsburgh representatives of 150 companies engaged in fabricating steel for bridges and buildings gave their enthusiastic approval to a far-reaching program embracing the general adoption of a new standard specification, the launching of an educational campaign to extend the use of structural steel, the establishing of a uniform method of computing costs, the standardization of trade practices and the maintenance of a research bureau on structural steel. Activities provided for in this program have been laid out for a four-year period. Supported as it is by the leaders in the structural industry, the plan already seems to be assured of success.

But, ambitious as this schedule may appear to be, it is only the logical expansion of an important work initiated several years ago when the fabricators organized the American Institute of Steel Construction. After a preliminary investigation it was decided to engage a committee of leaders in the academic, engineering and architectural professions to prepare a standard specification for the design, fabrication and erection of structural steel for buildings. A committee of five experts—perhaps the greatest American authorities on the subject—devoted four months to the task, submitting the completed specification early in 1923. This new standard, representing the first important advance since the first structural steel handbooks were prepared in the days when bessemer steel was at the height of its popularity, has been favorably received in all branches of the construction industry.

It now remains for the institute to convince state and municipal building commissioners and other interested authorities that the new code should be adopted. Encouraging progress in this direction already has been made, and the impetus likely to result from the four-year educational campaign is certain to drive home the many advantages to be derived from the universal adoption of the new specification. Already nine cities are using the institute's specifications either directly or indirectly and four of these cities have populations approaching the million mark. Among them are Detroit, Cleveland, Boston, Los Angeles, Buffalo, St. Paul, Omaha, Neb., Erie, Pa., Montclair, N. J., and Kansas City, Mo. In addition, many technical schools use the specifications.

## Industrial Management an Art

UNDOUBTEDLY the most important development in the progress of scientific management since its fundamental principles were conceived and put into practice by the late Frederick W. Taylor, is the tendency to consider management less in the light of a cold science and more from the standpoint of human engineering. Charles M. Schwab at the recent dinner tendered to him by the engineers of Philadelphia drew a clear picture of the superhuman things that can be accomplished when employers and employes have the proper human relations. Recently a prominent management expert caused considerable discussion among his fellows by stating that management is an art as well as a science. At the annual meeting of the Taylor society last week, the outstanding feature of the discussion was the extent to which management is assisted or hampered by the application or neglect of psychology.

Thus the whole field of scientific management gets back to the homely old truth that man cannot accomplish anything without the co-operation of his fellowmen and without the ability to get that co-operation. Abraham Lincoln's principles alone did not maintain the union. Of equal importance with his principles were the measures by which he applied and carried them out. Management truly is an art and while scientific management for many years has enjoyed a glamor as being something new, it is new only insofar as the artistic phase of management has been assisted by the clarification of the mechanistic factors. Clearly defined conceptions and purposes always are prerequisite to business success. However, splendid these purposes and conceptions, they are valueless until carried out. Their execution requires co-operation between men, and in the field of execution, the gift of leadership or personality, which is nothing more than a profound understanding of the psychology of fellow humans, will never be supplanted by stopwatches and to use an expression of Mr. Taylor's, "a few tons of printed blanks."

# Bethlehem Gains

**Balance Sheet for Year Shows Increased Volume and Larger Net**

An increase of 212 per cent in the net income of the Bethlehem Steel Corp. for 1923 over 1922 is shown in the preliminary report. Net income for 1923 was $14,374,152, compared with $4,605,330 in 1922. This makes available for dividends on common stock, after allowance for preferred dividends, $10,055,698, or $6.46 per share on the average stock outstanding. Surplus after dividends is $2,288,824, compared with a deficit of $2,332,685 in 1922. The comparative statement for the final quarter of 1923 and all of 1922 and 1923 follows:

| | Fourth quarter of 1923 | Entire year 1923 | Entire year 1922 |
|---|---|---|---|
| Net earnings | $9,935,147 | $37,373,288 | $19,793,712 |
| Interest | 3,270,244 | 12,322,997 | 8,689,193 |
| Depreciation | 2,846,460 | 10,676,078 | 6,499,188 |
| Net income | 3,818,442 | 14,374,152 | 4,605,330 |
| Dividends | 3,326,589 | 12,085,327 | 6,938,016 |
| Preferred | 1,080,274 | 4,318,253 | 3,662,310 |
| Common | 2,246,315 | 7,767,073 | 3,275,706 |
| Surplus | $491,852 | $2,288,824 | *$2,332,685 |

*Deficit.

Interest charges include proportion of discount on and expense of bond and note issues. With depreciation are included allowances for obsolescence and depreciation.

Earnings do not include those of Midvale-Cambria properties for first quarter of 1923 as Bethlehem did not take title until the end of March. At that time the common stock was increased by $97,681,400 in part payment for the new properties.

Unfilled orders gained during the final quarter but at the end of the year were 21 per cent under the total at the end of 1922. Net earnings for fourth quarter, stated at $9,935,147, compare with $10,518,951 for third quarter and $11,601,682 for second quarter.

President Grace in his formal statement gave the following figures relating to the corporation's business.

"The gross sales and earnings for 1923 aggregated $275,213,000 as compared with $131,866,000 for 1922.

"The total amount of new business booked by the corporation during the year, including $25,261,000 on the books of the Midvale and Cambria companies on March 30, 1923, amounted to $260,968,000 as compared with $149,212,000 for 1922.

"The value of orders on hand Dec. 31, 1923, was $53,265,000 compared with $53,134,000 at the end of the third quarter and $67,510,000 Dec. 31, 1922.

"The balance sheet of the corporation as of Dec. 31, 1923, will show current assets over current liabilities of $119,724,175 as compared with $87,197,190 the previous year. Cash and liquid securities as of Dec. 31, 1923, amounted to $35,521,800 compared with $28,237,355 a year ago.

"The net addition to property account during the year for plant construction and properties acquired, excluding the purchase value of Midvale-Cambria properties, amounted to $14,723,706. The estimated cost to complete construction authorized and in progress as of Dec. 31, 1923, was $13,550,000."

## New Company Takes Over Braeburn Steel Co.

Property of the Braeburn Steel Co., Braeburn, Pa., was taken over this week by the Braeburn Alloy Steel Co. The new company is capitalized at $1,000,000, of which $500,000 is in 8 per cent preferred stock and $500,000 in common stock. Officials of the new company include D. F. Sipe, president of the Vanadium Alloy Steel Co., Latrobe, Pa., president; G. H. Neilson, formerly president of Braeburn Steel Co., vice president; D. W. Yealy, president First Savings & Trust Co., Gary, treasurer; and A. J. Barnett, president of the Barnett Coal Co., Latrobe, secretary. The board of directors includes F. M. Graff, president First National bank, Blairsville, Pa.; F. Malcolm Graff, Graff Bros., Blairsville, Pa.; F. E. Pratt, vice president First National bank, New Kensington, and S. M. Bolkel of J. H. Holmes & Co., Pittsburgh.

The plant, recently modernized, includes a 24-pot and a 36-pot crucible furnace, two 6-ton electric furnaces, 16 and 14-inch bar mills, a 500-ton hydraulic press, six steam forging hammers, and complete heating and annealing equipment. Shipments can be made either by rail or water. Officials expect to have the plant in full operation by Feb. 15.

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## Profits To Be Shared

A profit-sharing plan will be put in operation by the Midland Steel Products Co., Cleveland, whereby employes will share in all profits in excess of $1,000,000 a year. The board of directors has decided on this, but details remain to be worked out. The company now has about 900 employes.

## Picketing Is Restrained

A permanent injunction restraining union machinists from picketing the plant of R. Hoe & Co., New York, manufacturer of printing machinery, has been handed down by Judge Selah B. Strong in special term of the Supreme Court, borough of Queens. Temporary injunction previously had been handed down. The company contended that the strike called Aug. 2 was in violation of an agreement of employment, and therefore was illegal. The union members held that the agreement with the company was not a contract but merely a memorandum made to operate between Dec. 26, 1922 when the old agreement went out of effect, and the time when a new agreement could be reached. They asserted that the strike was called because no new agreement was reached and that they were not bound by any contract at that time.

## Electric Orders Increase

The orders received by the General Electric Co. for the year ending Dec. 31, 1923, amounted to $304,199,746, compared with a total of $242,739,527 for the year 1922, or a gain of 25 per cent, according to a recent announcement by Gerard Swope, president. For the fourth quarter of 1923, orders totaled $74,452,442, as compared with a total of $66,568,333 for the corresponding quarter in the year 1922, or a gain of 12 per cent.

## Stoker Sales Increase

Washington, Jan. 29.—Sales of mechanical stokers in December, totaled 73, according to reports by the department of commerce. The December total was considerably under all other months of 1923 but November, when 50 were sold. Of the December number, 17 were for fire tube and 56 for water tube boilers.

# The Business Trend

January 31, 1924

BY JOHN W. HILL, FINANCIAL EDITOR

JANUARY has been a month of promise. Economic events at home and abroad since the first of the year have been both important and significant. Many of them will influence the developing trend.

During the month iron and steel demand has broadened steadily. Operations have expanded with unpredicted vigor and prices are perceptibly firmer.

For the first time since March unfilled orders of the United States Steel Corp. have increased.

The long-lagging copper and leather markets are more active. Petroleum has had the most rapid come-back in years.

Successful automobile shows during the month indicate another good year for the industry.

Banking resources have risen with unprecedented speed. Relaxed credit demand, and extraordinary gold imports are reflected. Continued pronouncedly easy money is forecast.

Expressions of coal miners' officials have lessened fears of a soft coal strike for higher wages on April 1. Meanwhile, coal markets are dull, output is rising and stocks are heavy.

### Securities Are Strong

The securities markets have displayed increasing buoyancy in January.

Commodity prices have been mixed. Corn has advanced. Wheat is firmer. Hogs are down. Building materials are down. Metals are higher.

Cotton, though a threatened scarcity exists, has reacted from its dizzy climb. Resistance of consumers to higher finished goods prices is reflected.

The outlook for spring building is good. Railroads have bought in fair quantities during January though car loadings have fallen below one year ago.

### Buyers Show Caution

On the whole January has shown that buyers' caution still obtains, but with less obstinancy in many lines. Completion of inventory-taking, and unexpected price strength is prodding some buyers into market.

Moreover, business sentiment is beginning to reflect the first tingle of enthusiasm of normal spring trade expansion. In its main outlines, the January picture has been constructive.

Abroad, also, the month has blossomed new hope. An international committee of experts, headed by an American, is grappling with the baffling problem of reparations.

England has swallowed the dreaded dose of a labor government with great equanimity. British unemployment is smaller. For all Europe, January events give promise that the beginning of some solution of the gigantic problems confronting her may be found in 1924.

## The Barometer of Business

### Weekly Composite

| | Last week | Week before | One mo. ago | One year ago | 1913 |
|---|---|---|---|---|---|
| Business failures.. | 491 | 525 | 440 | 508 | ..... |
| Cash ratio Fed. Res. System %. | 80.4 | 80.1 | 73.3 | 76.5 | ..... |
| Loan rate, 4-6 mo. N. Y. %..... | 4¾-5 | 4¾ | 4¾-5 | 4½-4¾ | 4¼-4½ |
| Aver. 25 indust'l shares ..... | $114.39 | $110.33 | $109.45 | $93.23 | $58.19 |
| Aver. 25 railroad shares ..... | $60.60 | $59.95 | $57.72 | $86.22 | $82.90 |
| Aver. 40 bonds.... | $78.56 | $78.21 | $76.55 | $78.43 | $93.00 |
| Car loadings, week ended Jan. 12.... | 872,265 | 703,206 | 899,522 | 873,251 | *840,524 |
| Bank debits, 246 cities (000 omitted) ..... | $9,765,000 | $10,445,000 | $9,711,409 | $10,225,111 | ..... |

*1920.

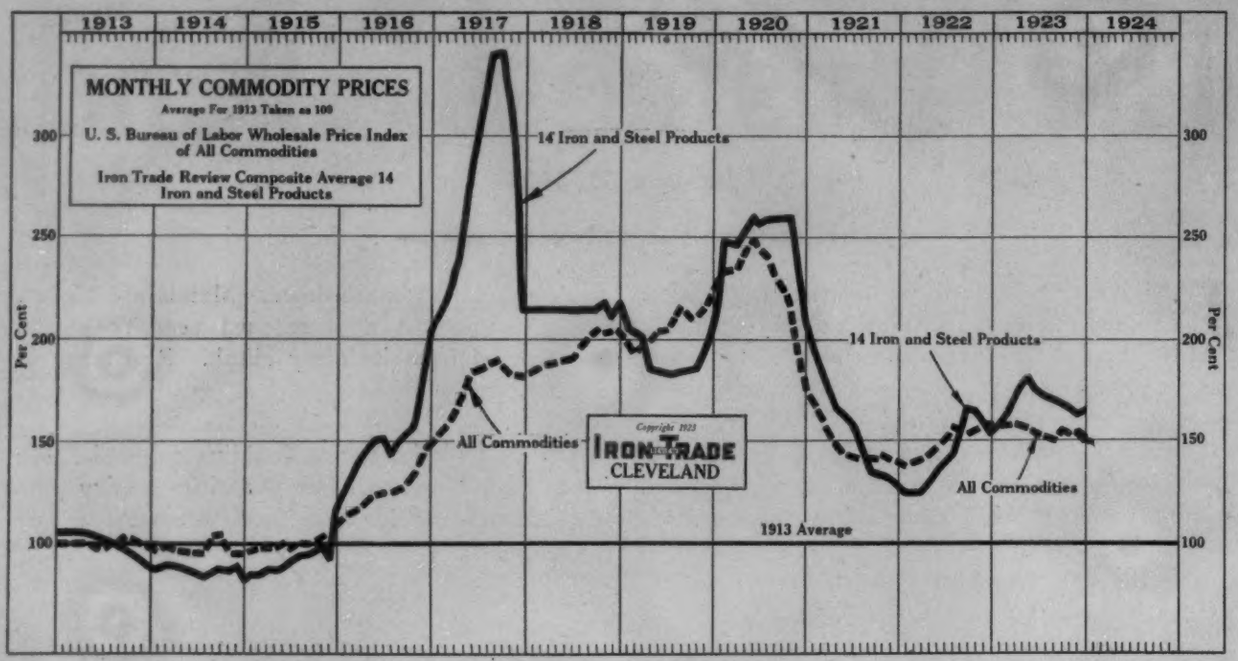
### Foreign Exchange (Demand)

| | Normal | Last week close | One week before | One month ako | One year ago |
|---|---|---|---|---|---|
| Sterling ..... | $4.86 | $4.23 | $4.23 | $4.33 | $4.64 |
| Francs ..... | 19.3c | 4.52c | 4.50c | 5.13c | 6.32c |
| Lira ..... | 19.3c | 4.34c | 4.35c | 4.33c | 4.77c |

### Monthly Comparison

| | December | Month before | Year ago | Monthly average 1913 |
|---|---|---|---|---|
| Dodge Building awards in 27 states (sq. ft.). | 48,096,300 | 52,599,500 | 36,931,300 | 31,250,000 |
| Business failures: Number ..... | 1843 | 1704 | 1814 | 1336 |
| Liabilities .... | $42,705,000 | $50,291,000 | $58,000,000 | $23,732,000 |
| Exports ..... | $425,000,000 | $400,000,000 | $344,327,000 | $233,195,000 |
| Excess of gold imports ..... | $31,929,697 | $39,011,000 | $23,730,000 | †$630,716 |
| Bureau of labor price index.... | 151 | 152 | 156 | 100 |
| Bradstreet's price index ..... | 144.7 | 145.4 | 148.2 | 100 |
| Economist's British price index.. | 168.5 | 167.1 | 156 | 100 |
| Cost of living index ..... | 165 | 165.3 | 156 | 100 |
| New incorporations ..... | $955,632,000 | $909,693,000 | $913,901,000 | $172,131,000 |
| Railroad net earnings ..... | *$86,130,000 | $102,746,000 | $78,860,000 | $59,301,000 |

†Excess of gold exports. *November.

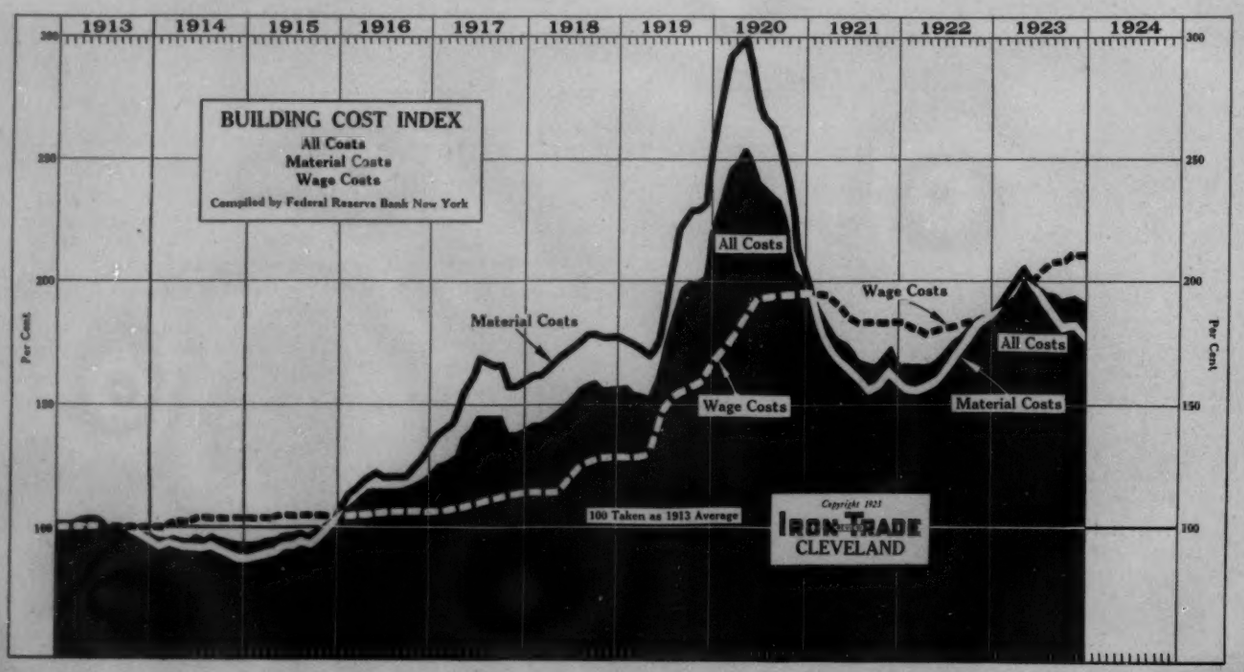


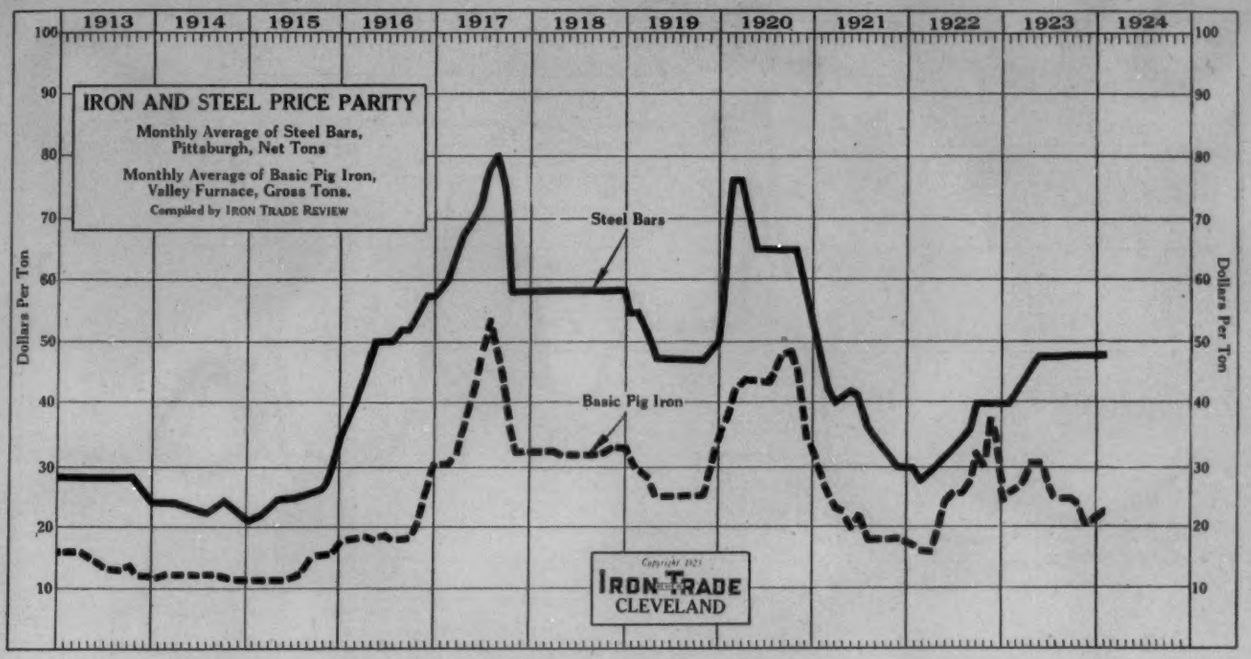

## Monthly Commodity Prices

THE IRON TRADE REVIEW composite market averages of 14 iron and steel products has been raising slightly since in December. The average of January wholesale prices has continued to recede slightly, however. The special firmness of steel prices reflects the rather marked strength displayed by the steel industry in recent weeks. The average for iron and steel values relative to 1913 is higher than the general commodity level, computed by the bureau of labor statistics.

## Building Cost Index

ONE of the factors favoring the prospect of strong spring building activity is the decline in construction costs as the year opens. The cost of construction as compiled by the federal reserve bank of New York stood at 91 per cent over 1913 in December compared with 93 per cent above in November. The revision is explained by lower prices for building materials. The index in building materials dropped to 78 per cent over 1913, the lowest point in months.



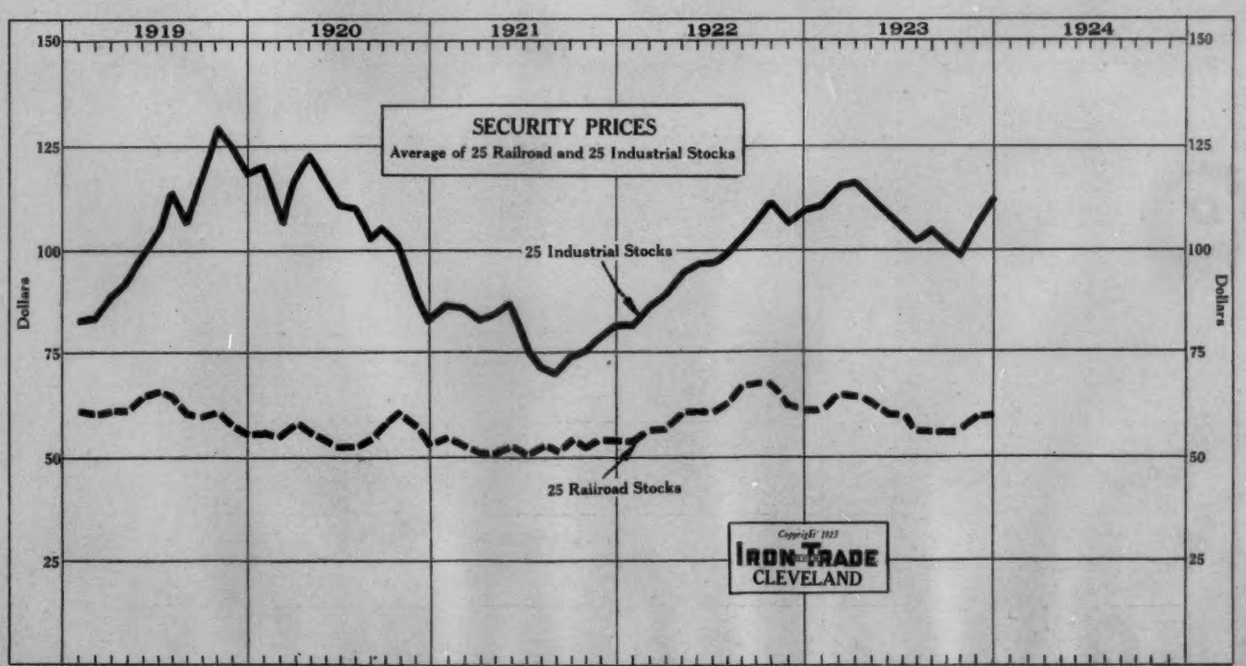


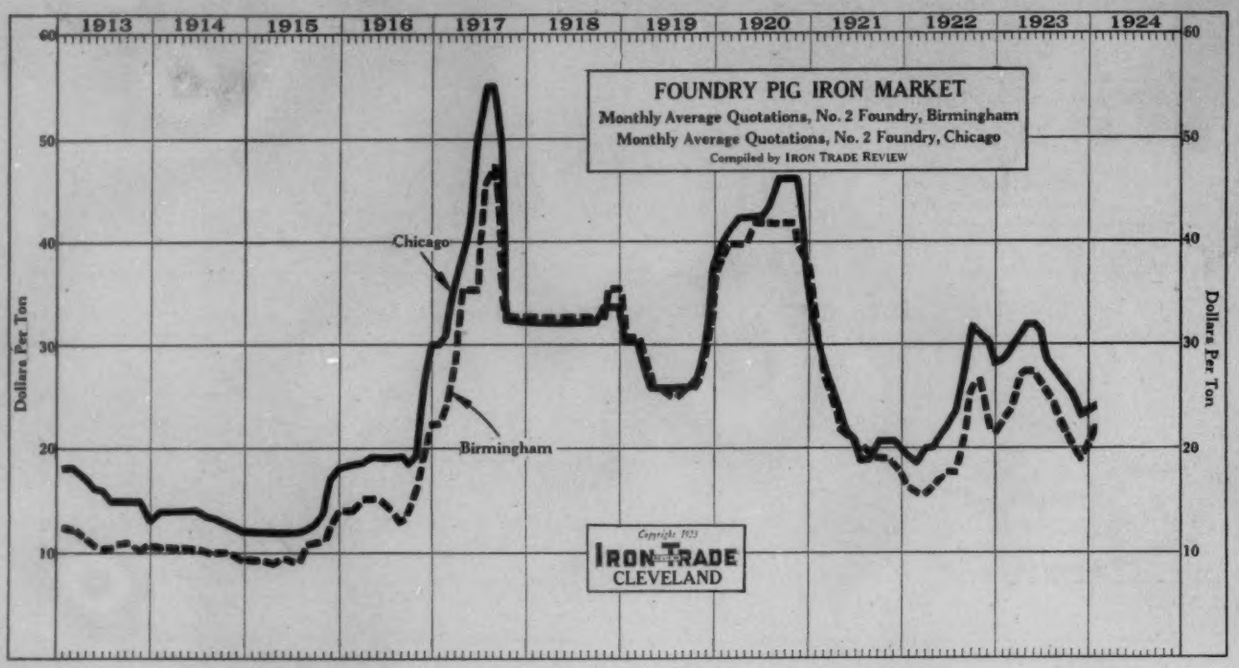

## Iron and Steel Price Parity

THE sustained firmness of finished steel has been one of the strongest factors in the industrial situation since last spring. Steel bars are beginning the new year with values unimpaired. Pig iron developed extreme weakness last summer but the buying movement which came in November checked the decline and basic valley iron has crossed the line into 1924 with a raise of about $1.50 per ton. The market continues to develop evidences of soundness.

## Security Prices

SECURITY prices have been rising since the last week of October almost without interruption. January brought some uncertainty, followed more recently by a vigorous upturn. Average share prices are the highest since last spring. The average for 25 industrials have recovered 80 per cent of the loss from the 1923 high point. Rail shares have regained about 60 per cent of the lost ground. Steel issues have been active. Favorable trade developments show in every direction.



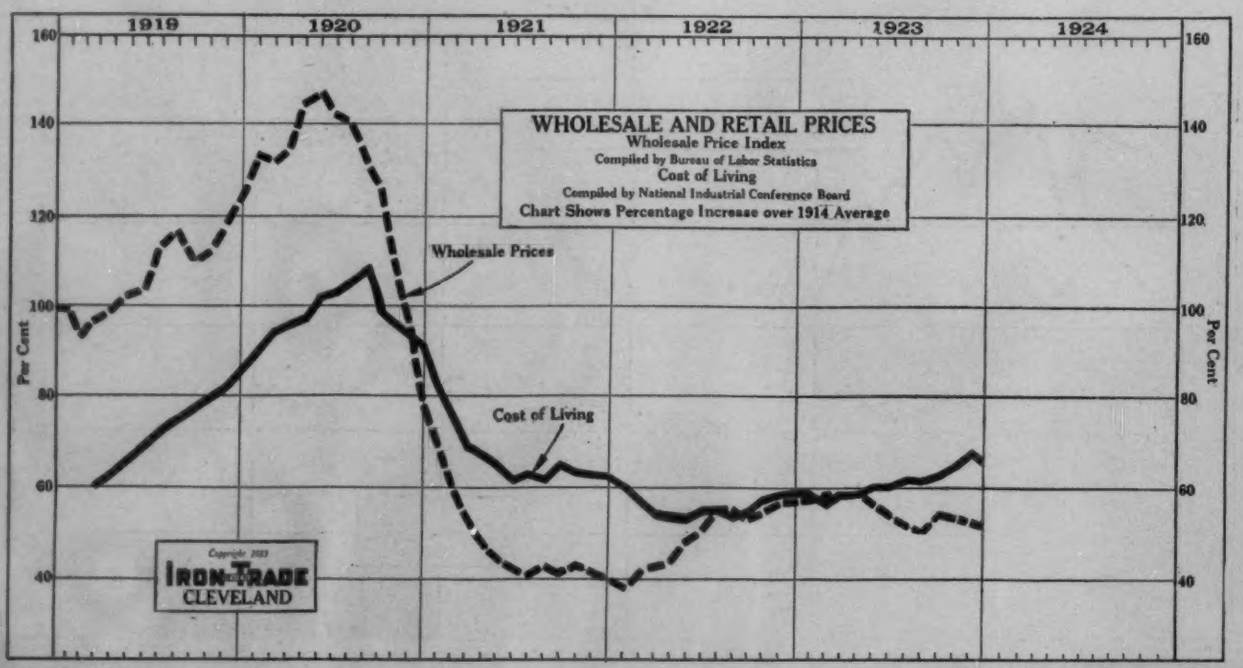



## Foundry Pig Iron Market

THE general improvement in the industrial situation has been reflected in gains in foundry pig iron values. More activity in manufacturing schedules by automobile and implement makers and various other consuming industries has contributed to strength. Both Chicago and Birmingham foundry pig iron grades have increased since December. The decline in southern iron was sharper last year than at Chicago and the upturn consequently has been relatively more marked.

## Wholesale and Retail Prices

WITH a few exceptions the commodity movement is toward greater steadiness and less violent fluctuations. The bureau of labor statistics wholesale price index declined again slightly on Jan. 1. It now stands 51 per cent above the 1913 average and 5 per below the high for 1923. It is more than 3 per cent under the level of one year ago. The cost of living declined a shade in December to 65 per cent over 1914. The level is now close to the highest since early 1921.



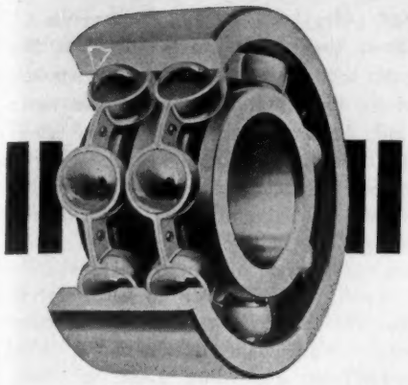


Fig. 1—Sectional view of a double row, deep groove, standard type radial bearing

# Making Ball Bearings for Automobiles

BY HERBERT R. SIMONDS

*The author is associate editor at Boston of* IRON TRADE REVIEW.

MECHANICAL motion is impeded constantly by the restraining force of friction and since man first started performing tasks by machinery, he has been faced with the problem of reducing this force to a minimum. But friction cannot be entirely eliminated. In attempts to reduce it, experimenters found that by separating two pieces of glass with steel balls, the friction in in the movement of one piece of glass with respect to the other was remarkably small.

The modern ball bearing is based on this principle. A ball bearing consists essentially of either two annular steel rings or two washers separated by a row of balls. In practice the design must provide for keeping the balls in a circular path and correctly spaced by retainers or ball separators.

Recently the demands for greater efficiency in all manufacturing processes have led to the increased use of ball bearings in a great variety of installations. Ball bearings may be grouped under three general types: Radial bearings, angular contact bearings (combination, radial and thrust), and thrust bearings. One type of radial bearing is shown in Fig. 1.

The radial bearing is the most common form and is familiar as the bearing support for electrical motor armatures, for automobile wheels, for transmissions and rear axles, and a great variety of machine tool shafts and spindles. This bearing is designed to carry a radial load and, because of present day grooved race construction, it has only small end thrust capacity.

Where a bearing must function under a combined radial and end thrust load, the angular contact ball bearing often is used. A typical case of a combined radial and thrust load is found in the worm mounting of a truck axle, in pinion shafts of automobiles, in deep well pumps, and similar vertical shaft installations. Thrust bearings are designed for the support of thrust loads only. Each of these three general types of bearings has many variations, and the subject of design of bearings for different purposes, therefore, is an exhaustive one.

It is due to the skill and ingenuity of manufacturers of ball bearings that many of the difficult problems of design have been solved. Correctness of design, extreme accuracy of dimensions, careful heat treatment, and high finish of raceways or ball grooves are some of the requisites which are imperative in a bearing which is to meet the demands of modern industry. In addition, this precision product must be turned out in sufficiently large quantities to supply the demands of the automotive and machinery markets.

The manufacture of ball bearings on a quantity production basis is one of the interesting industrial accomplishments of the present century. Some idea of the magnitude of the industry is gained from figures showing its approximate steel consumption. In

FIG. 2—ONE CORNER OF THE POLISHING AND LAPPING ROOM WHERE THE FINAL TOUCHES ARE PUT ON RACE RINGS

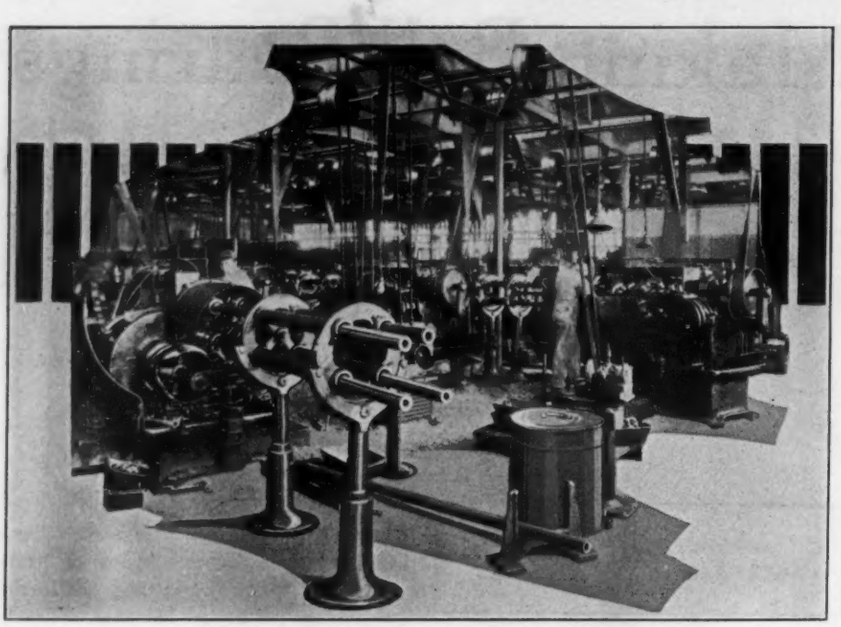


FIG. 3—A VIEW IN THE MACHINE SHOP WHERE AUTOMATIC SCREW MACHINES PERFORM THE FIRST OPERATIONS

the United States six large companies of nearly equal size, as well as a number of smaller companies, are producing ball bearings. One authority, who has studied the field, estimates that the United States consumption of steel for ball bearings reaches 1450 tons a month, or 17,400 tons a year. This steel varies in composition according to the needs and ideas of the different manufacturers. In general it must be clean, dense and uniform. One manufacturer gives the following analysis as typical of the steel bars used in making ball bearings: Carbon, 0.95 to 1.05; chromium, 1.35 to 1.50; phosphorus, below 0.02; sulphur, below 0.02; manganese, 0.35; and silicon, 0.25 to 0.35 per cent.

The need for a high quality of steel is readily appreciated when the precision required in a bearing is taken into account. Probably no other product manufactured in such large quantities calls for such close limits of dimension. Not only must the balls be truly spherical and uniform in size and the raceways accurately ground and polished, but each part must be so exactly made and fitted that an accurate, true-running, almost frictionless mechanism is obtained in the completed bearings. After every step in manufacture, each piece is given a thorough inspection with a view to detecting any imperfections in workmanship and steel. To maintain this rigid inspection, every fifth employe is an inspector. Some idea of the accuracy required in various parts and of the methods of obtaining this accuracy in quantity production may best be understood by taking one design, the radial type, and following it through its manufacture from the raw material to the completed article.

The U. S. Ball Bearing Mfg. Co., Chicago, manufactures complete bearings of practically every type, and its modern plants afford a good illustration of the different operations which in principle are essentially the same throughout the country. As radial bearings find the widest application, the department devoted to their manufacture form the major part of most ball bearing plants. This is the case at the Chicago plant of the U. S. Ball Bearing Mfg. Co.

Before describing the manufacture of radial bearings at this plant, it will be necessary to consider the design of the bearing itself. Fig. 1 shows the various parts, including the outer containing ring, usually spoken of as the outer race ring; the inner ring, known as the inner race ring; the balls and the ball spacing device called the retainer. With the exception of the retainer, the raw material is received in the form of bars which are bought on definite analyses from companies specializing in alloy steels. For the small sizes of inner and outer race rings, cold drawn bars, solid or hollow, depending upon the bearing design, pass from the stockroom direct to a battery of large four-spindle automatic machines where they are turned, faced, bored, chamfered and cut off in a single operation. From here the pieces follow through several lathe operations where the grooves are cut and the corners rounded. Transportation from one group of machines to another is by means of tote boxes for the smaller sizes and by electric truck for the larger and heavier sizes.

After leaving the lathes, the inner and outer race rings go to the heat treating department. This department is operated as an independent unit and is in charge of heat treating specialists. Oil and gas burning furnaces heat the pieces to a temperature of from 1450 to 1500 degrees Fahr. After remaining in the furnace for about 20 minutes, rings are quenched in various solutions, according to their size. From the quenching tanks the pieces are placed on a conveyor which passes slowly through an oil bath for the purpose of drawing the temper. This oil bath is maintained at a constant

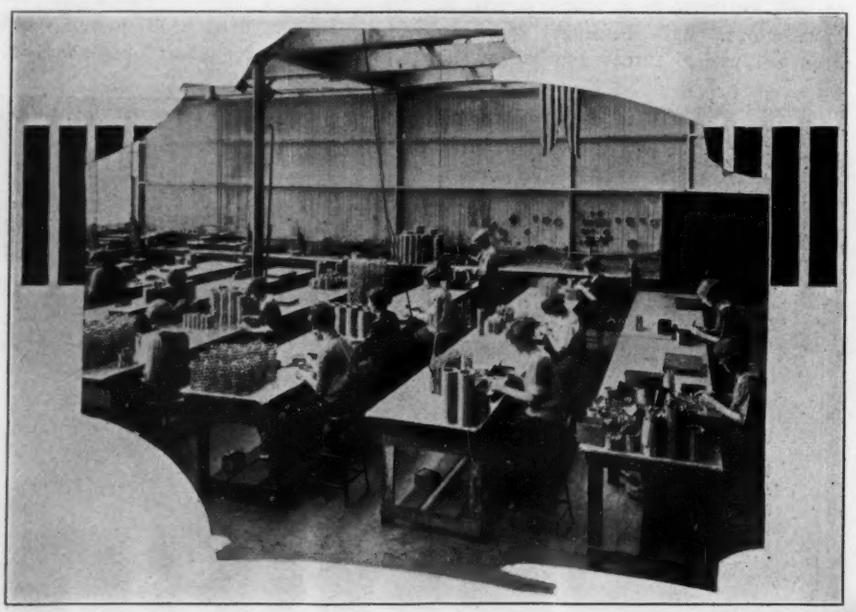


FIG. 4—IN THE ASSEMBLY OF BEARINGS THE UTMOST CARE IS EXERCISED TO KEEP OUT ALL DUST AND DIRT

temperature of about 350 degrees Fahr. After heat treating each ring is subjected to a bounce test. This is an interesting operation. An experienced tester standing in front of a heavy steel block much the shape of an anvil and resting on the floor, takes the rings from a conveyor at his right and hurls them, one at a time, onto the steel much as a boy would bounce a hoop onto the ground. The rings bounce off with a sharp metallic tone which must possess a certain bell-like quality to indicate that the metal is sound. It is stated that the operators conducting this test are able to tell the quality and temper of the rings within close limits by the variation in the sound of the rings as they strike the heavy steel. This operation is one of the tests given after each grinding operation.

### Many Grinding Operations

The pieces which have the requisite quality are subjected to a long series of grinding operations. Tolerances within 0.0001 inch are common in the finishing operations, and even with this close work, a matching or selective process is necessary to secure the perfect fit required between the two raceways and the balls of a complete bearing. At the Chicago plant the inners and outers pass from the bounce test to gang surface grinders where from 100 to 600 or 700 pieces are held on a horizontal magnetic chuck and ground first on one side and then on the other to bring all to a uniform thickness and somewhere near the required finished dimensions.

In some eastern plants, specially constructed grinders are used in place of these large gang surface grinders. In one plant an ingenious home built machine consists of two parallel surface grinding wheels rotating in opposite directions and with opposing surfaces spaced apart a distance equal in the required thickness of the piece to be ground. The inners and outers are then carried in between the grinding surfaces in a holder which permits them to revolve freely about their own axes. In this way both sides are ground in one operation.

At the U. S. Ball Bearing Mfg. Co. plant where the magnetic chuck is used the individual pieces leave the machine with a slight amount of residual magnetism. To rid them of this magnetism they are rolled down a long inclined conveyor which passes through four or five electric demagnetizing coils so designed that the rings roll out at the lower end of the conveyor completely demagnetized.

From this point on, the process is one of refinement in grinding. Both the inners and outers pass through a series of operations, each succeeding one using a little finer grain of wheel and working to a little closer dimension.

After the last grinding operation, the groove which forms the ball race in each piece is lapped to give the surface a high polish. For this operation each piece is mounted in a revolving chuck and the operator, using a specially formed wooden tool with leather covered tip and rouge or other fine polishing substance, produces the desired finish by pressing the leather tip at different angles against the groove. Depending upon the design of bearing some other operations may be necessary.

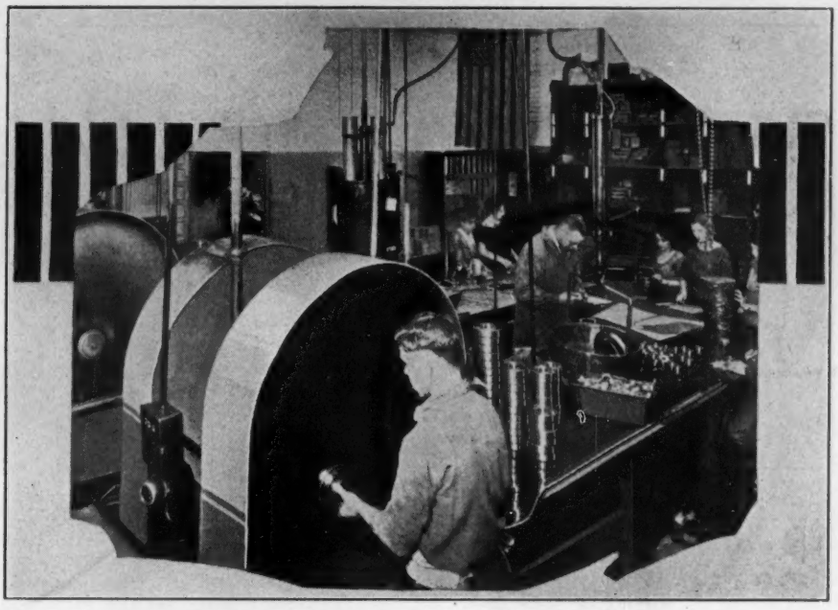


FIG. 6—AFTER CLEANING EACH BEARING IS HELD AGAINST A REVOLVING SPINDLE SO THAT INNER RING TURNS. THIS DETECTS DIRT OR AN INCORRECT FIT

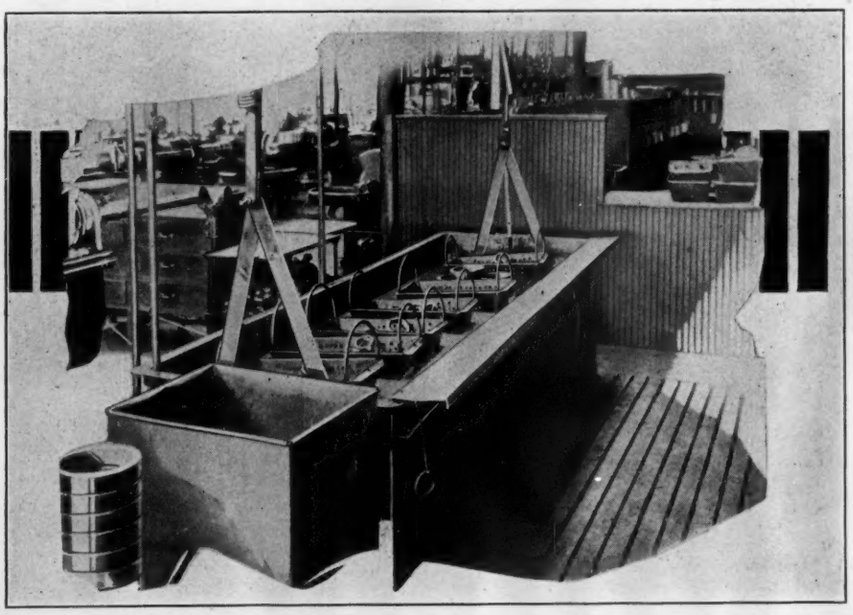
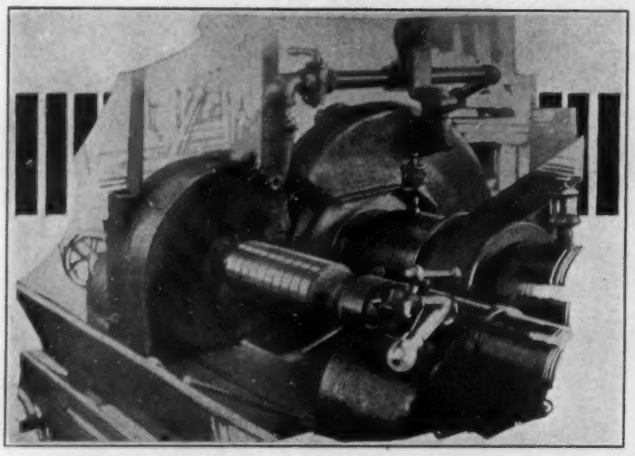


FIG. 5—ELABORATE CLEANING OPERATIONS IMMEDIATELY PRECEDE THE ASSEMBLING OF FINISHED BEARINGS

### Finished Parts Are Matched

After the grinding and polishing have been completed, it is necessary to match the different parts so as to obtain a perfect fit in each individual bearing. This is done by an operator called a matcher. He stands at a table with a large number of inners and outers before him as well as a supply of balls. He assembles an inner and outer ring with a few balls and then by spacing these balls, he



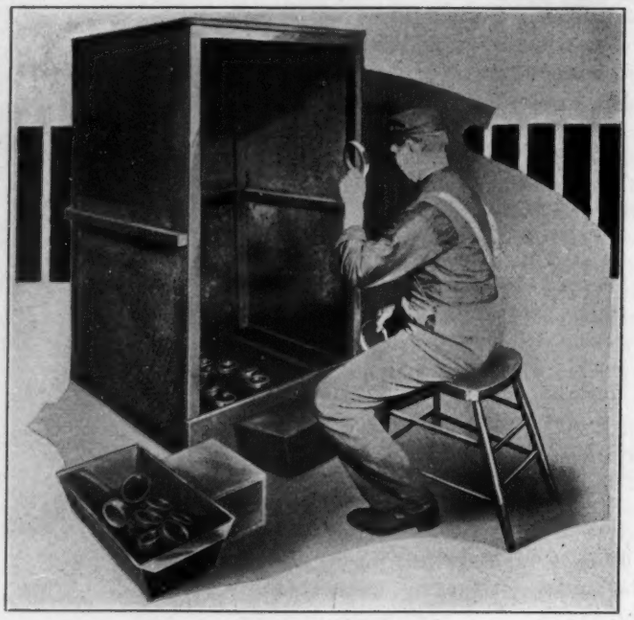


FIG. 7—TEN OUTER RINGS MOUNTED ON A SINGLE MANDREL ARE SURFACE GROUND AT ONCE. FIG. 8 (RIGHT)—RINGS ARE TESTED BY BOUNCING THEM OFF A HEAVY STEEL CASTING AND NOTICING THE BELL-LIKE SOUND

tests the feel of the complete unit. If the fit is correct, a set of balls of the same size, but not used for matching, is substituted and the unit passes on to the cleaning and assembling department. From this time on the inner and outer rings are held together as a pair. If the matcher is not satisfied with the feel of his assembled bearing, he keeps the same inner ring but tries another and another outer ring until finally he has one which gives exactly the correct fit.

At some plants an attempt is made to overcome this process of selection. An inner ring surrounded by standard balls is inserted in a gaging device which shows the required inside diameter of the outer ring which will give correct fit. Outer rings then are placed on a grinding machine and by the use of a direct-indicating micrometer dial are ground to the individual dimension for a perfect fit.

So far, little has been said about the steel balls which enter into the construction of ball bearings. Frequently these are made in a separate plant and always in a separate department. They are made by forging round bar stock into rough balls which are sufficiently spherical to permit their being placed between two cup abrasive wheels for the first grinding operation. The forging is done under gang hammers which turn out from

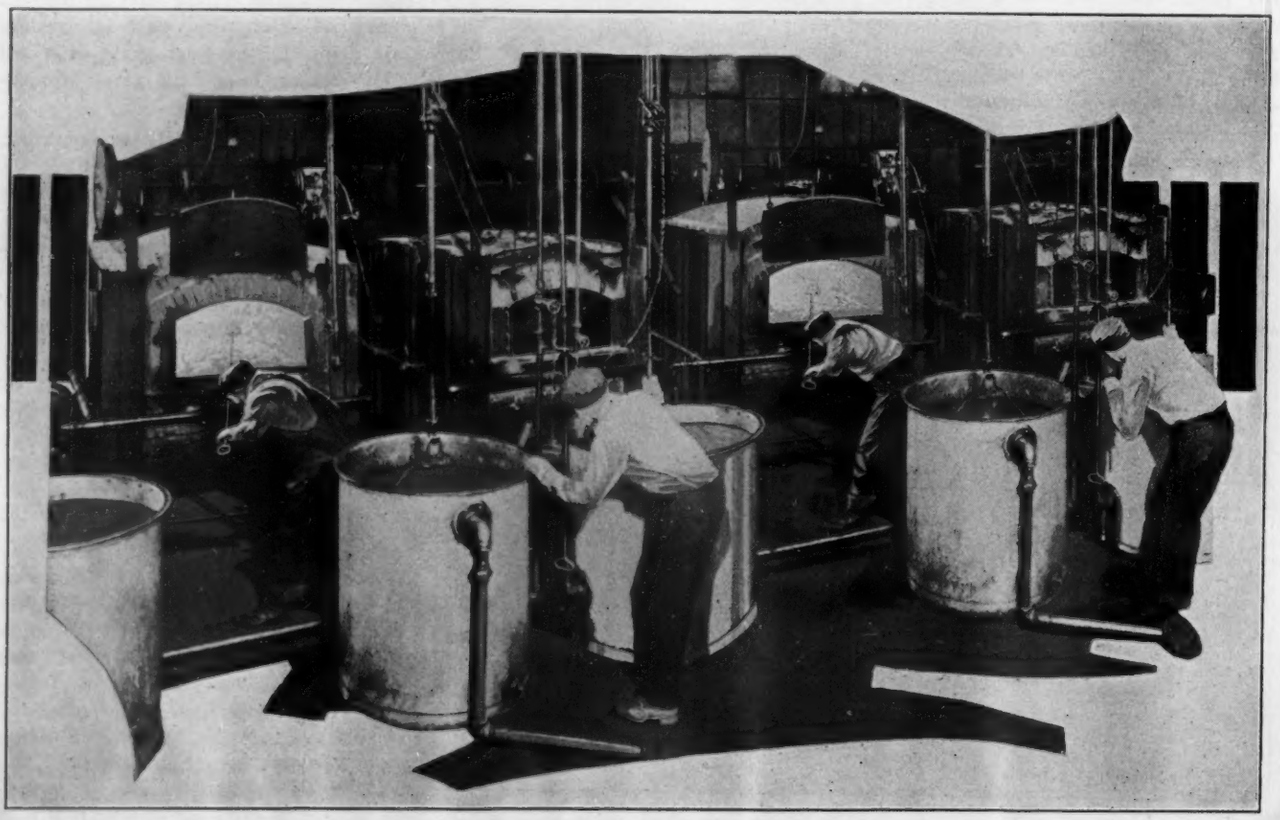


FIG. 9—OIL-FIRED FURNACES ARRANGED IN LONG ROWS ARE USED FOR HEAT TREATING THE RINGS. THE QUENCHING TANKS ARE SHOWN IN THE FOREGROUND

5 to 10 balls at a time. The grinding operation is nearly automatic, the grinding wheels being set slightly eccentric. This first grinding operation is intended merely to true up the form of the forgings. After this balls are heated in special furnaces, which are rotated to effect a uniform temperature throughout the charge. The balls are then quenched in water.

The heating and quenching processes are automatic and deliver the balls properly hardened to a series of finish grinding and lapping machines. These machines usually are special and differ in each plant. They consist essentially of rotating disks carrying grooves around which the balls pass. Some disks have spiral grooves and others carry a cutout section which permits the balls to drop from one groove to another after each revolution. The abrasive used keeps getting finer and finer as the balls pass from one operation to another, the last being pure oil.

Because of the close fit between the different parts that make a complete bearing great care is required in assembling and testing. It is necessary to prevent dirt or dust from getting into the bearings after the assembling has been started. The assembling operations differ with variations in bearing design. Those bearings using a relatively small number of balls are assembled by inserting the balls between the inner ring and outer ring all at one side, then by properly spacing these balls the whole unit is held together. Where a large number of balls are used, opposing grooves must be cut one in the inner and one in the outer ring. The two rings are then separated either by mechanical means or by heating the outer ring after which the balls are dropped through the grooves into their place in the race of the bearing. In all usual types of bearings the balls are held correctly spaced by a device known as a retainer or ball separator, which consists of two formed pieces, brought together from opposite sides of the bearing and riveted with plain or spacer rivets as required. After assembly the bearings are washed, given their final tests and inspections, dipped in hot rust-preventing oil, and placed in moisture and dustproof wrappers without being touched by the hands of the packer. They are then ready to be boxed and sealed for shipment.

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The 1924 edition of the Blue Book of the Southern Metal Trades association, Atlanta, Ga., has just been issued. The booklet contains 56 pages, 8½ by 11 inches, and is devoted to buyers guide and to advertisements of companies holding membership in the Southern Metal Trades association. About 30 pages of the book are devoted to a classified material section in which member companies are listed under products.

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## Would Shift Departments

As a result of plans now under consideration, the patent office and the bureau of mines may be transferred from the interior department to the department of commerce. This can be done by executive order of the President under the organic act which provides for the transfer of scientific and statistical bureaus to the commerce department. Although the proposed change has been recommended in the socalled Brown plan of the reorganization of government departments, the removal of these two government divisions from the interior department would not require legislative action by congress as would the other recommendations of the Brown plan. The recommendation to transfer the patent office and the bureau of mines to the department of commerce has been made with a view to providing better technical co-ordination.

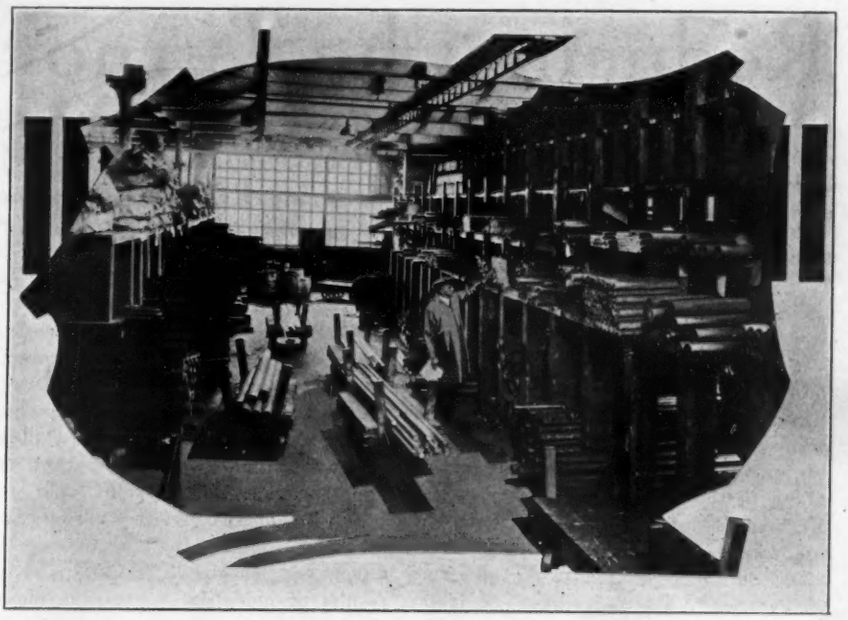

FIG. 10—QUALITY OF MATERIAL IS IMPORTANT IN THE MANUFACTURE OF BEARINGS, THUS AN EFFICIENT STORAGE SYSTEM IS REQUIRED

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## Engineers Install Officers

Retiring as president of the Engineers Society of Western Pennsylvania, Morris Knowles, president of Morris Knowles, Inc., Pittsburgh, consulting engineer, delivered an address at that organization's annual meeting held Jan. 22 at the William Penn hotel, Pittsburgh, on "The Engineer of Today and His Responsibility." At this meeting the following officers were installed for the ensuing year: President, Frederic Crabtree, professor of metallurgy, Carnegie Institute of Technology, Pittsburgh; vice president, Walter B. Spellmire, Pittsburgh manager for the General Electric Co., and W. E. Fohl, consulting mining engineer; A. Stucki, consulting engineer, was re-elected treasurer. Two new directors were added as follows: G. M. Goodspeed, metallurgist, National Tube Co., McKeesport, Pa., and W. A. Weldon of Blum-Weldon & Co., Pittsburgh. The other directors are J. C. Hobbs, Richard Khuen Jr., F. I. Ellis and E. D. Leland. The junior past presidents now are Henry D. James and Morris Knowles.

The annual banquet was held Monday evening, Jan. 28, at the banquet hall of the William Penn hotel, Pittsburgh. The following delivered addresses: Elisha Lee, vice president, Pennsylvania railroad; and F. I. Kent, vice president of the Bankers Trust Co. The humorist was Strickland W. Gillilan, toastmaster being Arthur W. Thompson, president of the Philadelphia Co.

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Recent changes at the No. 10 tube mill of the Youngstown Sheet & Tube Co. at East Youngstown, O. resulted in increasing the output 15 per cent. New bending and welding furnaces, charging machines, runout troughs, chill rolls and a straightening machine were installed together with inspection skids, scales, cooling racks and scrap conveyors.

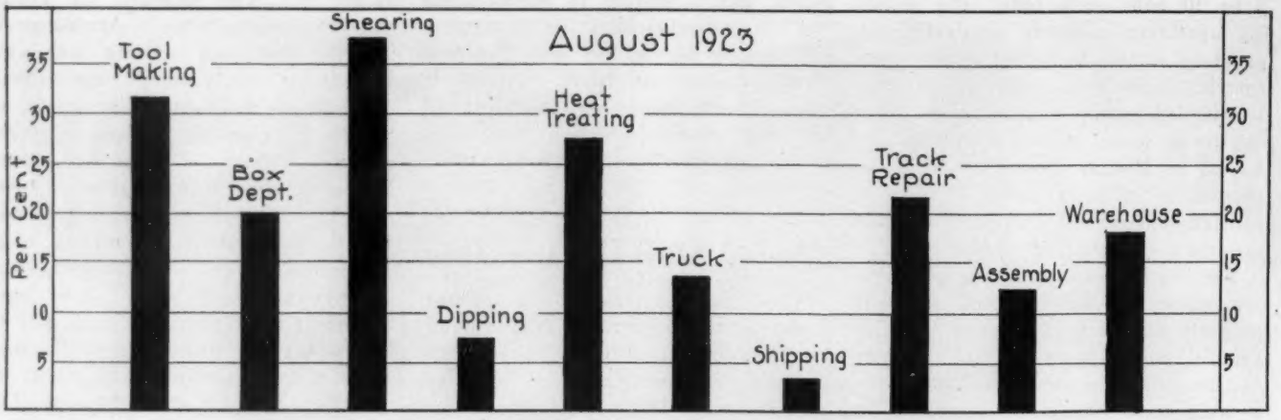


Fig. 1—A chart showing comparison of percentage of labor turnover of departments of typical manufacturing plant

# Reducing the Turnover of Labor

## Suitable Records Afford Basis for Study of Causes of Labor Turnover—Intelligent Methods of Employing and Handling Men Are Most Effective in Lowering Excessive Percentage

BY CARBIS A. WALKER

ONE of the most important problems confronting manufacturing executives today is that of labor turnover. Labor turnover means the number of employes in a company who either resign or are discharged for one reason or another and the refilling of the vacancies caused thereby. In many lines of industry, employers are awakening to the fact that their labor turnover in reality is an item of expense. The percentage of labor turnover in certain plants in the garment industry has mounted as high as 375 per cent, while in steel mills and machine tool plants it sometimes is as low as 18 per cent.

### Determining Turnover Percentage

The percentage of labor turnover is calculated by dividing the average number of employes in the plant during the month into the total number of those who leave on their own accord or are discharged. For example if there were 210 men in the plant on Nov. 1 and 214 on Nov. 30, the average working force during the month would be 212. We will assume that 20 men left or were discharged during the month. Therefore, by dividing 20 by 212, we obtain 9.4 per cent as the labor turnover for the month, or 112.8 per cent on a yearly basis.

Labor turnover is caused by resignations, dismissals or shutdowns. Employes resign because they are dissatisfied with wages, the nature of work or conditions, the hours or time of shift, or the labor policy; because of more attractive opportunities elsewhere; because of family reasons or community conditions, or personal, or other reasons. Among the causes for discharging employes are incompetency, physical shortcomings, insubordination, dishonesty, violation of rules, and tendency to disturb fellow workers and to make trouble. In most cases, shutdowns or enforced lay-offs are the results of industrial depression, slumping markets, cancellation of orders, discontinuance of process, shortages of supplies and material, breakdowns and strikes.

Numerous elements enter into the cost of labor turnover. Among the most important are the cost of clerical help, time and expense of instruction, destruction or breakage of tools, the increased wear and tear on equipment, loss in production and spoiled product.

Many companies have gone to the trouble of trying to actually measure the cost of turnover in dollars and cents. As a result of these efforts it has been determined that the average cost per man for turnover amounts to about $35. In spite of this rather high figure, comparatively few executives recognize the important of labor turnover.

### Reducing The Turnover

Various methods are employed for reducing the labor turnover. For instance, a thorough analysis or description of the kind of work to be done is helpful. Applicants should be selected carefully and new workers should be trained systematically. Steady promotion with fair and liberal increase in wages tends to reduce the percentage of turnover to a great degree.

Form 178 2m 11-23

THE TRI-STATE STEEL CO.

PLANT No._____ DEPT._____

ENTRANCES

| Date | NEW | | | RE-EMPLOYED | | | TRANSFERRED | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Experienced | Learners | Laborers | Experienced | Learners | Laborers | Physical Reasons | Promoted | Failed | Department Fluctuation |
| 1 | | | | | | | | | | |
| 2 | | | | | | | | | | |
| 3 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| 31 | | | | | | | | | | |
| Tot. | | | | | | | | | | |
| % | | | | | | | | | | |
| Tot. | | | | | | | | | | |
| % | | | | | | | | | | |
| Tot. | | | | | | | | | | |
| % | | | | | | | | | | |

To Compute Percentages Divide Totals by "Department Average for Month."

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FIG. 2—FORM FOR RECORDING DAILY CHANGES

The author is industrial engineer, Cleveland.

The average employe usually is satisfied with a fair deal, a decent place to work in, a chance to earn a living wage and an opportunity for advancement. When a worker feels confident he is receiving these benefits he will be a better worker, will produce more and will be more willing to remain permanently with his company than a disgruntled workman.

Satisfying the worker is the secret of success in a good many of the large manufacturing plants, and where many workers are employed a well organized employment and personnel department is an effective guarantee that the employe's interests will be safeguarded.

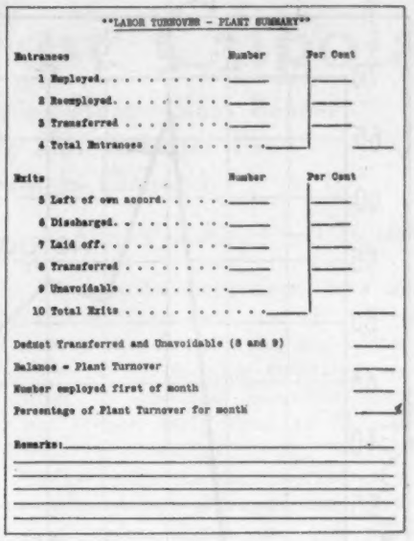
### Careful Records an Aid

Before attempting to reduce the percentage of labor turnover, data on existing conditions should be compiled. A method, for tabulating turnover, which is simple yet effective, should be adopted. A convenient form for this purpose is shown in Fig. 2. In a plant employing only a few men, this form can be kept up to date by the time department or by the office of the person responsible for the hiring. In large plants, where there are a great number of employes and many departments, the foreman in each department should keep his own report. The reports should be completed and turned over to the employment manager not later than the first or second day of the month following. This will give the employment manager sufficient time to calculate the percentages and compile summary sheets. A typical summary sheet blank is shown in Fig. 3.

### Cause Foremen to Compete

Experience has showed that reports and graphs posted on the factory bulletin board, indicating the turnover by departments and the foreman's name who is responsible for each department, serve as incentives to the foreman and their men to reduce the percentage of turnover. Sometimes the personal pride in the foreman is touched when he sees his department at the top of the list in comparison with those of the other foremen. A typical chart of this information is reproduced in Fig. 1.

A departmental chart of this kind assists the management in controlling labor turnover because it gives a fine analysis of causes, which can be studied by the personnel manager. Quite often this analysis reveals shortcomings on the part of the foreman. Either his methods of handling men are at fault or he is not suited for that work.


**"LABOR TURNOVER - PLANT SUMMARY"**

| Entrances | Number | Per Cent |
|---|---|---|
| 1 Employed | | |
| 2 Reemployed | | |
| 3 Transferred | | |
| 4 Total Entrances | | |

| Exits | Number | Per Cent |
|---|---|---|
| 5 Left of own accord | | |
| 6 Discharged | | |
| 7 Laid off | | |
| 8 Transferred | | |
| 9 Unavoidable | | |
| 10 Total Exits | | |

Deduct Transferred and Unavoidable (8 and 9)

Balance = Plant Turnover

Number employed first of month

Percentage of Plant Turnover for month %

Remarks:

FIG. 3—CONVENIENT FORM FOR SUMMARIZING LABOR TURNOVER

As a result of the findings, steps can be taken to educate and assist the foreman in this respect.

Another helpful chart is that illustrated in Fig. 4, which shows the percentage of labor turnover for the plant as a whole. This chart is by months and includes every department, foreman and workman. If the "actual" line is in the vicinity of the "normal" line and continues to remain that way,

## RECORD OF LABOR TURNOVER

FOREMAN _____ MONTH OF _____ YEAR _____

| EXITS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LEFT OF OWN ACCORD | | | | | | | | | DISCHARGED | | | | | | | | LAID OFF | | | TRANSFERRED | | | | UNAVOIDABLE | | | | | | |
| Working Conditions | | | | | Location | | Other Reasons | | | | | | | | | | | | | | | | | | DEATH | | | | | |
| Wages | Heavy, Wet or Dusty, Etc. | Ill Health | Monotony | Department Fluctuation | Family Moving | Housing Condition | | Unknown | Careless | Incompetent | Unreliable | Liquor | Trouble Breeder | Insubordinate | Misconduct | To Decrease Force | Physical Reasons | Temporarily Employed | Physical Reasons | Promoted | Failed | Department Fluctuation | Pensioned or Superannuated | Marriage (F) | Exterior Causes | Occupation Causes | Total Entrances | Total Exits | Date |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 27 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 30 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 31 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Tot. |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | % |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Tot. |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | % |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Tot. |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | % |

Number of Employees Department on Last Day of Last Month _____ Last Day of this Month _____ Department Average For Month _____

IN LABOR IN EACH DEPARTMENT. AT THE END OF MONTH DATA ARE COLLECTED AND MONTHLY AVERAGES COMPILED

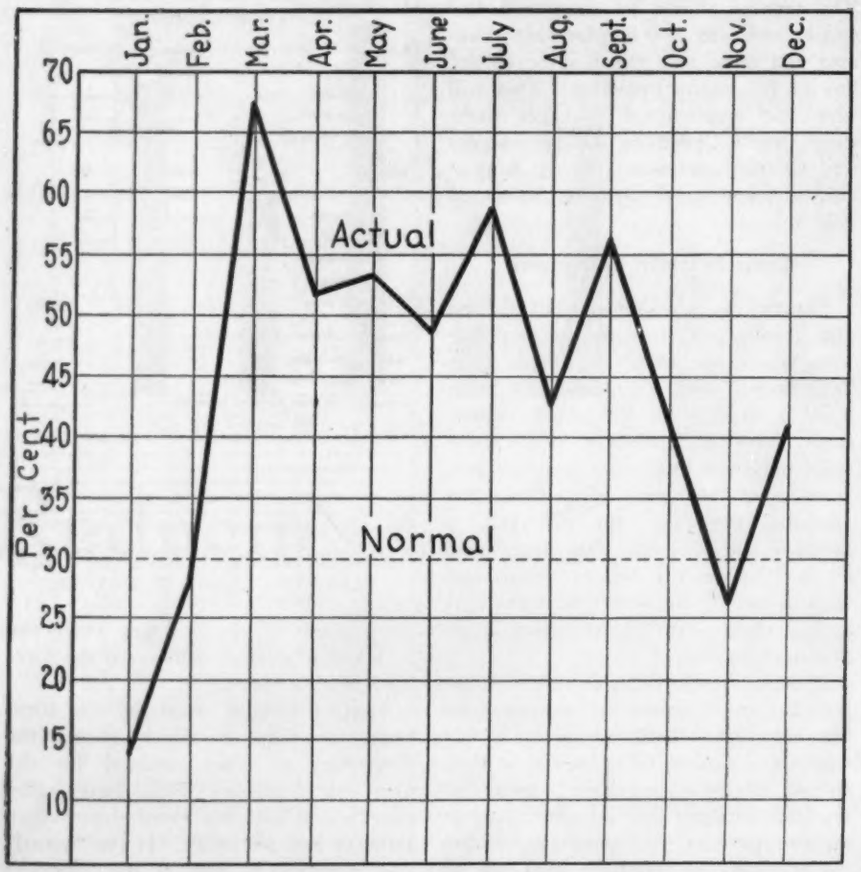



FIG. 4—CHART SHOWING FLUCTUATIONS IN LABOR TURNOVER THROUGHOUT YEAR

there is little need of having to look behind the scenes. But, if the "actual" line runs exceedingly high, attention should then be directed toward the departmental chart. Select a few of the highest departments and then take the labor turnover sheet, Fig. 2, and observe closely the largest total of employes going out under any one heading.

Suppose the three columns headed "wages," "unreliable" and "incompetent" are the highest for the month. In that case the investigation should start by ascertaining why men are complaining about low wages. Make an analysis of their reasons and then study the wage system employed by the company, regardless of whether it is a day rate, piece rate or bonus or premium system. Make a thorough investigation of the employment system and determine why men who are unreliable and incompetent are allowed to pass through into the various departments. Check up on the kind of help hired.

### Analyzing Each Job

Possibly the investigation of incompetence may lead to the necessity of analyzing every position in the plant, to the end that the employment department can be provided with a list of the qualities to be desired in applicants for each job. This is not such a complicated task as it may appear at first glance. In a large plant many jobs are identical and an analysis of one will suffice for all. Moreover, it is not necessary to make all of the analyses at the same time, especially when the plant is operating under normal conditions. They can be taken up and disposed of when new positions are to be filled. The employment manager should have on hand a complete classification of trades employed in the manufacture of the company's product. This classification merged with analysis of each job provides first hand information pertaining to the qualifications necessary by the applicant.

It is surprising to learn of the number of companies, both large and small, that have absolutely no efficient method or system of employing help. More than one company has been a complete success from the date of organization because the men employed were the right kind, while other companies have been failures or have "marked time" because they did not recognize the importance of the employment question. Executives who would not think of organizing a company without a sales manager at the head of the selling department, a treasurer in charge of finance, or a general manager or factory manager in charge of production, sometimes overlook the fact that a competent employment or personnel manager should be in charge of employing competent help.

Many employment managers have made psychology the basis of examination tests for applicants. These tests are being given in many of the large employment offices throughout the country today, with successful results. Sometimes the question is asked, "is it worth while?" It is. A bank president does not select a shifty-eyed man for the position of cashier. Whether he realizes it or not, he uses applied psychology before he completes his examination of the applicants available for the position of cashier.

One of the greatest mistakes made by the employers today is their failure to promote and advance men when their work merits such recognition. When a man takes a position, one of the first thoughts that enters his mind is, "What is there in this for me." In many cases there is nothing more than a standard wage rate, abuse and misunderstandings, until he finally walks out of the plant a free agent. He should receive a wage rate sufficient to support him and his family, a chance for advancement and the assurance that his interests are going to be looked after. In exchange, he should earn his wage, bring enthusiasm to his job and be faithful to his employer.

A wonderful change has taken place during the past 15 years in respect to the amount of attention and money spent on the welfare and care of employes. When all employers recognize the importance of intelligent employment methods, the millions of dollars wasted annually in labor turnover will be reduced materially.

## Show Plant Additions

A rather extensive 1924 calender is being distributed by the Youngstown Sheet & Tube Co., Youngstown, O. This calendar is designed to remind its users of the extensive additions that have been made to the facilities of this company through the purchase of the plants of the Brier Hill Steel Co. and the Steel & Tube Co. of America. The calendar contains views of the plants at Youngstown, O., Indiana Harbor, Ind., Niles, O., Warren, O., Mayville, Wis., Zanesville, O. and Evanston, Ill.

The Penn Metal Co., Boston, has purchased the machinery and equipment of the Dexter Mfg. Co., Philadelphia, and will expand its business to include the Philadelphia territory.

# Blast Preheated in New Cupola

## Arrangement of Refractory Brick Checkerwork Conserves Heat—Blast Passes Transversely Across Cupola Melting Zone—Pressure and Exhaust Fans Used—Substantial Saving in Coke Consumption Is Claimed

APPLICATION of the regenerative principle for preheating the blast before its introduction into the heating zone of a furnace is by no means new in metallurgical practice. Speeding up production, conservation of fuel and other considerations have brought about practically universal use of the preheated blast in smelting iron ore in the modern blast furnace. The same principle has been found valuable in the operation of open-hearth furnaces and in annealing ovens of certain types, but it has remained for European practice to take the lead in the use of this principle in the common cupola furnace.

The type of cupola invented by E. Schurmann, Dresden, Germany, and built under plans furnished by Dr. S. G. Werner, Dusseldorf, at the plant of the Griffin Wheel Co., Chicago, is the first to be used in this country. This furnace was completed and placed in service early in October, and has been in continuous service since that time, alternating with a cupola of the usual type, to supply metal for car wheels.

### Develops Special Practice

Starting with the same charges and a coke and iron ratio developed on the standard cupola, the Griffin company is developing a special practice by experimentation and research, which reflects credit upon that organization's enterprise. The procedure followed at present, differs from that adopted at the start and changes are being made as fast as operating features of the furnace develop. A description of the present practice is presented, but first a brief study of the cupola and its accessory equipment will be found of value.

As may be noted from the accompanying illustrations, the shell of the cupola, the drop bottom and arrangement of the charging doors, etc. conform to standard American design. An 84-inch shell, lined to 72 inches with the common variety of cupola blocks forms the main portion of the cupola. A pair of hinged, semi-circular drop doors affords the conventional method for removing the drop. A feature of note in connection with the drop is the design of the foundation, shown at *A*, Fig 1 and also at *B* in the reproduction of the drawing. Fig. 3. The concrete foundation pier is carried up to a ridge immediately beneath the dividing line between the two half doors. A flat space is provided near the center to support the

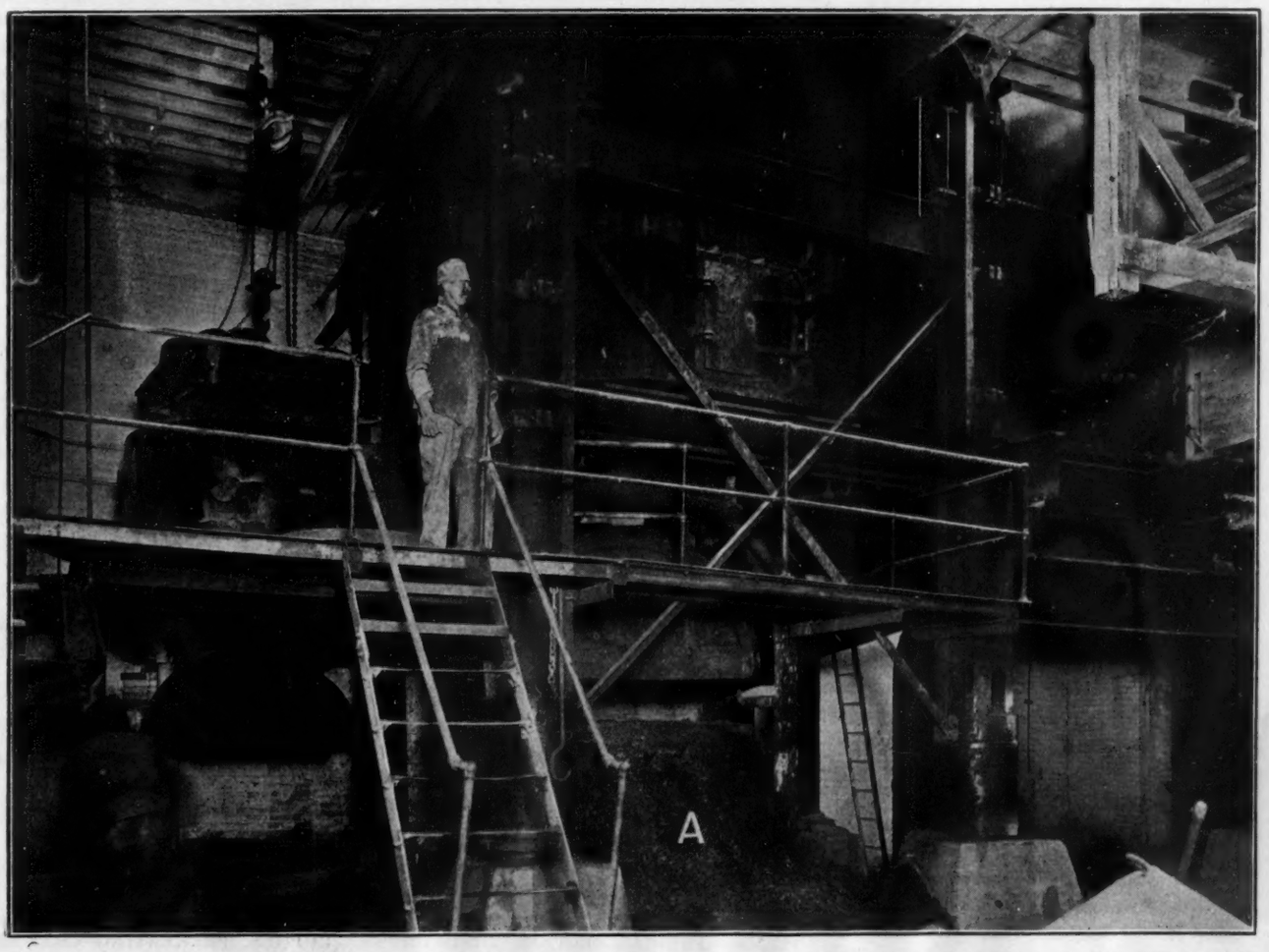



FIG. 1—TWO PREHEATING CHAMBERS PLACED AT THE RIGHT SIDE BY SIDE PERMIT PASSING THE AIR FROM THE BLOWER THROUGH HEATED CHECKERWORK TO ONE SIDE OF THE WINDBOX. NOTE THE FOREHEARTH AT THE LEFT

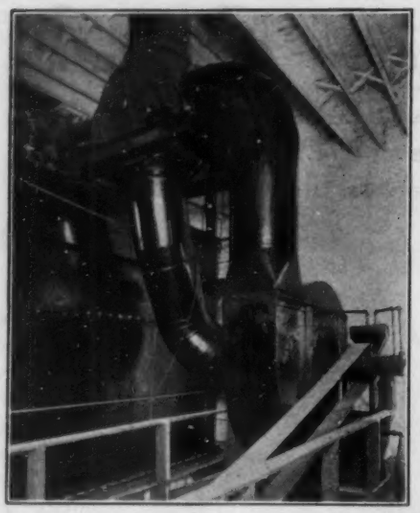


FIG. 2—ARRANGEMENT OF SUCTION FAN AND VALVE CONNECTING TO THE INLET AND EXHAUST, FROM THE PREHEATER AND UPWARD TO THE STACK. UPPER PORTION OF THE CHAMBERS SHOWN AT THE LEFT WITH THE 4-WAY VALVE AT THE TOP

door props. The ridge is pitched sharply at an angle, so that when the doors are dropped, the contents of the cupola are divided and roll down the steep sides of the pier to the right and left, away from beneath the cupola. This makes it easier to remove the refuse from the dump.

### Divided Windbox

The windbox extends entirely around the cupola in the usual manner, but is divided at opposite points by brick walls, which separate it into what is practically two windboxes. This feature is shown in the cross section at the extreme left of Fig. 3. The cupola originally was provided with a double row of tuyeres, upper and lower, but after a few experimental heats the upper row was closed. Each half of the windbox communicates with a sheet metal preheating chamber, lined with firebrick and containing a checkerwork of refractory brick. These chambers are divided and insulated from each other, but are contained within a single sheet metal structure, communicating at the top through two 24-inch pipes into a common valve chamber.

The checkerwork is formed by placing upon end the standard refractory bricks resembling a square cross section used for this type of work. The brick structure is supported upon an arch at the bottom and the last course terminates 18 inches below the top of the chamber. The bricks are ¾ inch in section, so that the effective space, left when they are laid with the ridges or flanges touching is 1½ inches. Each regenerative chamber is 7 x 7 feet inside the metal walls and 22.6 feet high. Both chambers communicates through a 24-inch pipe with a valve chamber in which a butterfly valve directs the air and exhaust gasses at right angles and alternately in opposite directions into the main blast supply line and the exhaust line.

### Valve Is Reversed

In operation, the blast is forced through the main supply line from a fan blower, down through the checkerwork chamber, into the tuyeres at one side, across the cupola, out the opposite tuyeres, upward through the neighboring checkerwork and into the exhaust line. Thus on starting, the exhaust emerging from the cupola, passes upward through the chamber adjacent and heats the brick work within.

At regular intervals, varying from 7 to 10 minutes the valve is reversed, causing the entering blast to pass downward through the preheated checkerwork and into the tuyeres at a high temperature.

To accelerate the current of exhaust gas passing through the checkerwork, an additional fan has been provided as shown in Fig. 2. A two-way valve has been installed on the outlet side of the pipe communicating with the exhaust pipe. When in one position, this valve permits from 40 to 50 per cent of the emerging gases to be drawn downward into the fan, and thence out through the valve chamber a second time and into the stack. When reversed, this valve permits all of the products of combustion to pass directly into the stack. At first it was feared that the heated exhaust gas from the regenerative chamber would injure the fan, and accordingly water-cooled bearings were provided for the fan. However, it has been found that the temperatures of the emerging gases are below 400 degrees Fahr. and no trouble is experienced. Air is blown into the cupola preheating chambers at from 6000 to 12,000 cubic feet per minute and at a pressure of from 12 to 14 ounces. The suction exerted on the exhaust side is 3 ounces.

### One Set of Tuyeres Used

Only the lower of the two sets of tuyeres originally installed is in use. This row of tuyeres is practically continuous, and extends around the cupola at an average height of 31 inches from the sand bottom. The divided windbox, offers only half of the area effective in delivering the blast. The other half is engaged in removing the products of combustion. In other words, the blast passes directly across the cupola instead of upward as in ordinary practice and the melting area is only that portion directly opposite the tuyeres, probably about 6 inches in height. It is stated that little blast goes upward. Even with the charging doors open no flame is visible and it is possible to

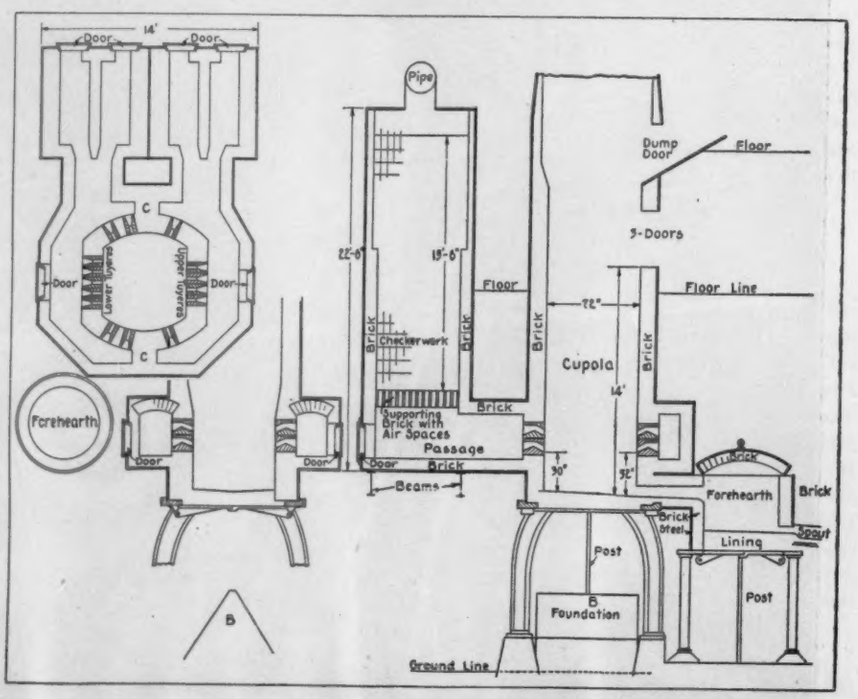



FIG. 3—VERTICAL SECTION THROUGH THE CUPOLA, PREHEATING CHAMBER AND FOREHEARTH, WITH RIGHT ANGLE VERTICAL SECTION THROUGH THE CUPOLA AT THE LEFT AND HORIZONTAL CROSS SECTION THROUGH THE TUYERE LEVEL ABOVE

hold a hand within the cupola at the charging door and experience no discomfort. This direct cross current statement further is supported by the fact that no evidences of burning are to be found around the upper edges of the tuyeres, although some slight effects are visible around the bottom of the tuyeres.

### Low Temperature on Top

A few additional unique features of the cupola construction are worthy of note. Two doors are provided, on opposite sides of the windbox, giving access to the interior so that the windbox may be entered and attention given to the tuyeres at either side. No difficulty is experienced in entering the cupola to make up the bottom 12 hours or more after the bottom has dropped, although considerable heat remains within the adjacent preheating chambers. The blast pipe at the top of the two chambers may be removed when necessary to permit men to enter and repair or replace the refractory lining or checkerwork.

Thermocouples are provided at the top and bottom of each of the two chambers by which the temperatures of the entering blast and emerging combustion residues may be measured. It has been found that the gases leave the cupola and enter the preheating chamber at more than 2000 degrees Fahr. and reach the top of the checkerwork at about 400 degrees Fahr. Iron is charged through three doors spaced equidistantly on the shell and located 14 feet above the bottom of the cupola. Limestone is shoveled in from the same floor level, while the coke is charged through an inclined chute 19.5 feet above the bottom, shown in Fig. 3.

The forehearth is provided with a removable top, and also with a pair of drop doors as may be noted in Fig. 1. This forehearth is placed at one side and only slightly below the level of the bed of the cupola.

As was noted previously, the cupola is under experimental service, although on a production basis. At present the depth of the bed at the start is from 25 to 30 inches above the tuyeres and with 4000 to 4200 pounds of iron on the first charge. The cupola is lighted through stationary oil burners, the pipes for which are visible beneath the cupola in Fig. 1 After lighting the cupola cold, that is when it has been allowed to stand a sufficient time for the preheating chambers to become cool, the first iron appears at the tap hole in about 20 minutes. However, when the residual heat is present, so that the entering blast is hot, iron appears in about 10 minutes.

Successive charges at present are constituted of 8000 pounds of metal to 650 or even 625 pounds of coke, giving a melting ratio of 1 to 13½. In the experimental work, the practice has been followed of reducing the amount of coke on an established iron charge and then raising the amount of iron in succeeding charges. It has been found that a low coke ratio in each case tends to reduce the amount of oxidation. From this, it should not be assumed that oxidation has caused trouble.

Some slight loss in the total silicon and manganese has been noted but inasmuch as the tap hole is left open and iron flows directly into the forehearth, which may be noted in Fig. 1, no difficulty has been encountered due to this oxidation. Although the blast travels transversely across the cupola and directly into the opposite tuyeres, no trouble is experienced due to slag being blown out through the tuyeres. The slag is permitted to flow out with the iron into the forehearth, and it is stated that no slag is found floating on the ladle when the metal is tapped for pouring. The slag is tapped from the forehearth at suitable intervals.

The advantage claimed for the cupola in practice are the saving in coke, a reduction in the sulphur content, and a greater toughness in the iron melted. The company states that the test pieces poured from metal melted in this cupola are much tougher than those from the standard type cupola. A saving of from 20 to 25 per cent in the amount of coke required to melt a given quantity of iron is reported. The sulphur is said to be about two points lower in the iron when it comes from the cupola than when it was charged. The analysis of the entering charge shows 0.175 per cent sulphur. It is said the metal shows a sulphur content of 0.155 per cent when the metal is taken from the cupola.

### Melting Speed to Increase

The melting speed of the Schuermann cupola is about 60 to 70 per cent of another cupola the same size in use in the Griffin foundry. A maximum output of 90 tons has been obtained in a single day and the average rate is about 15.5 tons per hour. Familiarity with the operating conditions of the cupola doubtless will permit the Griffin company to increase this rate, and also to lessen the interval between the time when the blast goes on and first iron appears at the tap hole.

## Council To Aid Young Italian Engineers

Announcement has been made that the American Engineering council will aid the Italian ambassador, Prince Gelasio Caetani, in furthering "intellectual immigration" from Italy. Fifty young Italian engineers, recent graduates of technical schools, will sail soon for New York, thence to be sent to industrial centers to become simple laborers in large manufacturing plants. The vanguard of 50 will be followed this year by at least 100 more, annual migrations being planned. The American Engineering council, in response to a communication from the ambassador, has voted to co-operate with the Italian embassy and the United States authorities in securing places for the Italians and in looking after their general welfare and seeing them well employed.

Twenty-five of the Italian engineers will be put to work in the Ford plant, seven will go to the Westinghouse Electric & Mfg. Co. and three to the General Electric Co. The others will be distributed in large plants in the East and Middle West. where places are open.

## Southern Ceramic School To Open in Fall

Rapid progress is being made on the new school of ceramic engineering now under construction at the Georgia School of Technology in Atlanta. It is expected the school will open next fall. Constructed as a result of financial support by the affiliated industries of the Southeast that use clay products and by special approporiation of the Georgia state legislature last summer, the school will be the first in the South devoted to ceramic engineering. Five branches of ceramic engineering are to be taught including clays and allied products, including refractories, face and common brick, etc., fire brick, graphite, crucibles, sewer pipe, etc.; the abrasive industry; the calcareous industry, including limestone, gypsum, etc.; the glass industry and the enamel industry.

It is announced by Dr. Brittain, president of the Georgia School of Technology, that Arthur V. Henry, of the Ohio State university, has been selected as the head of the school of ceramic engineering.

# Large Uses of Steel In Small Ways

STEEL wool originally was a by-product in the manufacture of loom hedles but it now is produced on a commercial basis by several types of machines. The product, which merely consists of long steel shavings or fibers, finds wide application as an abrasive or polishing medium, as a substitute for emery cloth, sand paper or pumice stone for cleaning hollow ware, rheostats, patterns, tools, windows, brass sign plates, railings, machine parts, enameled ware, cooking utensils, bathroom fixtures, mirrors, cut glass; and for removing paint from marble, tile, glass and porcelain. Large quantities also are consumed by shipbuilding companies, furniture and woodworking factories and in the household. In japanning work any drips, runs or other defects are smoothed out by steel wool with the result that after the second dip no scratches are visible.

Prior to the war large quantities of steel wool were imported in various sizes and degrees of fineness from Switzerland and Germany but since then production in this country has increased to the point where the yearly output approximates 1,400,000 pounds. The product, which is triangular in cross section is made in several grades from coarse fibers to wool so that any kind of cleaning and polishing can be accomplished and is packed in small, medium and large cartons which retail at 40 cents per pound.

Certain American manufacturers produce steel wool from high-manganese bessemer wire by attaching one end to a power-driven drum. The wire is pulled under several knife blades of the saw-tooth type arranged in tandem in an inclined position similar to a bit in a hand plane. Triangular shaped slivers of steel are shaved from the wire and when about seven-eighths of the wire is converted into steel wool the residue becomes too thin to withstand the pulling strain and is discarded. In later type machines the wool is produced by drawing the wire through circular cutting dies. Foreign made steel wool is produced by first shaving a thin fiber from soft steel wire in order to present a flat surface to the cutting tool. The wire then is stretched over a frame but beneath the cutting tool in such a way that the wire is shredded into filaments of triangular shape cross section. This shape renders the wool sharp for abrasive and polishing purposes.

### STEEL WOOL

*THIS is the fifth of a series of articles dealing with some of the thousands of obscure uses of steel which in the aggregate go a long way toward absorbing the great American tonnage, and in proclaiming steel the universal metal. The first article on "Corsets" appeared on page 1427 of the Nov. 22 issue of* IRON TRADE REVIEW, *the second on "Pins," appeared on page 1555 of the Dec. 6 issue, the third on "Pens" appeared on page 1678 of the Dec. 20 issue, and the fourth on "Cotton Ties" appeared on page 231 of the Jan. 17 issue.*

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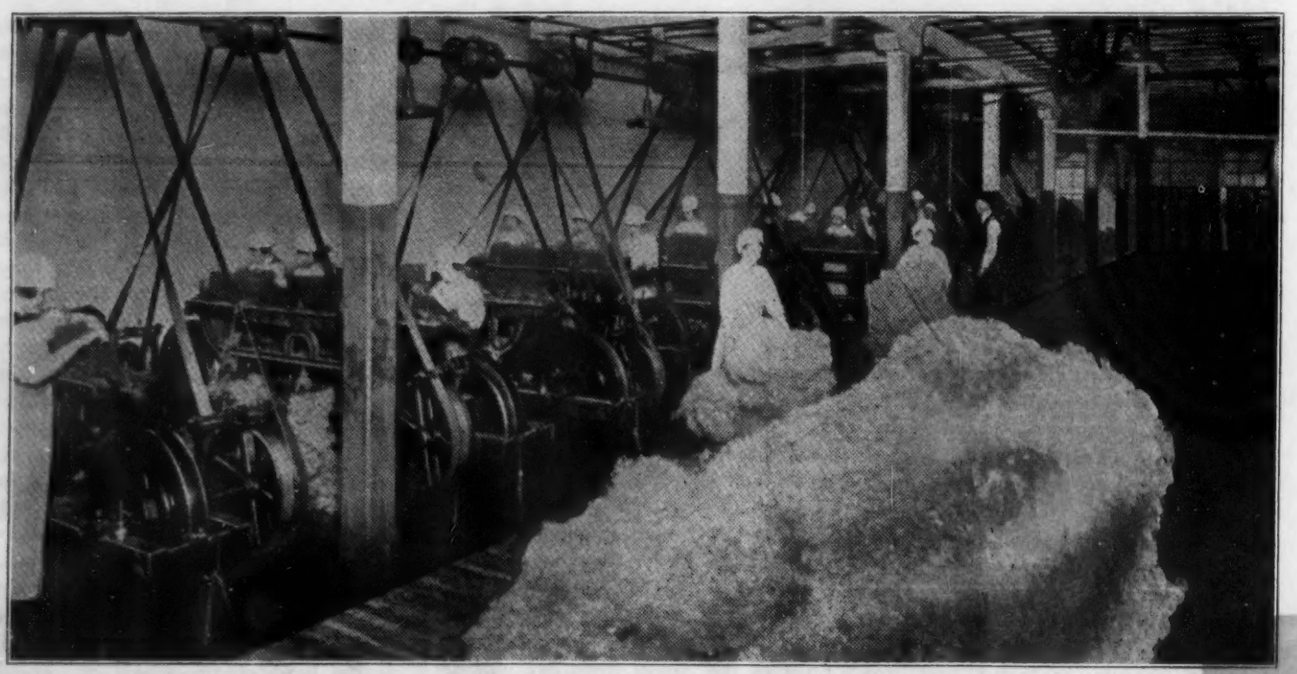
A pamphlet entitled "Trade Standards Adopted by the Compressed Air Society" has just been published, embodying the result of study and research by executives and engineers associated with the members of that organization. It embraces the nomenclature and terminology relating to air compressors and their operations; a history of the development of speeds



A GROUP OF MACHINES FOR SHREADING WIRE INTO STEEL WOOL

of air compressors an explanation of capacities and pressures; instructions for the installation and care of air compressors with illustrations of devices suggested for cleaning the intake air; recommendation for the lubrication of air compressing machines and the cleaning of air receiver piping; a description of the low pressure nozzle test recommended by the society, and a partial list of application of compressed air.

The offices of the Compressed Air society are at 50 Church street, New York. C. H. Rohrbach is secretary.

## American Copper Output Larger in 1923

Smelter production of copper in 1923, according to the department of the interior, based on actual production of 11 months and estimate for December, was about 1,477,000,000 pounds, compared with 950,000,000 pounds in 1922, an increase of over 55 per cent. New refined copper from domestic sources, determined in the same way, was 1,435,000,000 pounds compared with 905,000,000 pounds in 1922. Secondary copper from refineries totaled 130,000,000, compared with 146,000,000 pounds in 1922. This gives a total output of refined copper of 2,248,000,000 pounds in 1923, compared with 1,505,000,000 pounds in 1922.

Imports for 11 months in 1923, according to the bureau of foreign and domestic commerce, were 623,519,135 pounds, compared with 541,013,220 pounds for all of 1922. Exports for 11 months were 739,049,275 pounds, compared with 743,039,888 pounds for all of 1922.

## Indiana Foundrymen Meet at Purdue University

Indiana foundrymen representing foundry interests throughout the state, gathered for a two-day session at Purdue university, Lafayette, Ind., Jan. 17-18. The first day's session, W. A. Knapp, assistant director engineering extension service, Purdue, presiding, was devoted to problems of training and technical questions of manufacture. R. E. Wendt and G. F. Puxton, both connected with the university, presented the practical and scientific phases of selective training in foundry work. Gray iron metallurgy was discussed by E. J. Lowry, Hickman, Williams & Co., Chicago. Wm. Woodhall, National Car Coupler Co., Attica, Ind., was unable to be present but his paper on the manufacture of steel castings was read. G. W. Gilderman, Dodge Mfg. Co., Mishawaka, Ind., presented some interesting facts on the manufacture of semisteel castings.

Thursday evening, January 17, was devoted to a business session with W. D. Hammerstadt, Rockwood Mfg. Co., Indianapolis, president of the Indiana Foundrymen's Ass'n., as chairman.

The Friday morning session, J. D. Hoffman, head of department of practical mechanics, Purdue, presiding, was featured by the presentation of the following papers: "Electric Furnace Product in the Foundry," W. K. Booth, Booth Electric Furnace Co., Chicago, and "Nonferrous Metals" by E. G. Jarvis, Niagara Falls Smelting & Refining Co., Buffalo. Motion pictures depicting the operation of the sand throwing type of molding machine were presented by the Beardsley & Piper Co., Chicago. During the afternoon the visitors were the guests of the university and attended demonstrations given by the regular student classes in the various shops.

# Reviews of New Books

### Report of A. S. T. M. Meeting

*Proceedings*, Twenty-sixth annual meeting, American Society for Testing Materials, Vol. 23, Part I, 1006 pages, 6 x 9 inches and Part II, 683 pages, 6 x 9 inches; paper, cloth or half leather, published by the American Society for Testing Materials, Philadelphia.

This volume of the proceedings of the meeting held at Atlantic City, N. J., June 26-29, 1923, is issued in two parts. The first contains the annual reports of 32 of the standing committees of the society together with the discussion of these reports. More than a hundred tentative standards, which have either been revised or are published for the first time, also appear in this volume. Part 2 contains the text of 50 technical papers together with the discussion. The technical papers cover the results of investigations by experts in the field of engineering materials. The reports of the committees cover ferrous and nonferrous metals, ceramics, concrete, preservative coatings, coal and coke, shipping containers, methods of testing, nomenclature and definitions, and many other topics.

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### Manufacture of Electric Steel

*The Manufacture of Electric Steel;* by Frank T. Sisco; cloth, 304 pages 6 x 9 inches, published by the McGraw-Hill Book Co., Inc,. New York and furnished by IRON TRADE REVIEW, Cleveland, for $3.00, net.

Aimed to fill a need existing in the steel industry, this work is intended to furnish a complete treatise on methods of making electric steel. From the selection of scrap to teeming the ingots the method and process is made the important consideration. Various electric furnaces are described briefly, most emphasis being put on such details as are of most importance to the metallurgist and the man at the furnace. Throughout the book the author has held to the opinion that high quality is the essential consideration in electric steel and his directions and conclusions all are based on that essential. Simple language has been employed so it may be understood by the man who operates the furnace, the melter, and his helpers. In this endeavor the colloquial has been used in some instances. Both acid and basic practice are discussed. The book is eminently practical and deals directly with the detail of the actual making of a heat of electric steel. While other writers have discussed the electric furnace from the standpoint of electric, thermal and mechanical efficiency, this is not held important for the present work, most stress being placed on actual operation to produce a given result in high quality.

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### Revises Technical Writing Book

*Technical Writing*, by T. A. Rickard; cloth; 337 pages, 5 x 7¼ inches; published by John Wiley & Sons, Inc., New York; and furnished by IRON TRADE REVIEW for $2.00 postpaid.

This book, the first edition of which was published in 1919, was the outgrowth of a series of five lectures delivered before the engineering classes of the University of California in 1916. With a feeling that technical students were not being given sufficient training in writing the English language, the author revised and expanded the notes for the purpose of publication. The text met with wide approval and has just been republished in the second edition. In preparing the work for the new edition many corrections and additions have been made. The first two and last two chapters have undergone little change, but the others have been rewritten. A discussion of the subjunctive and of

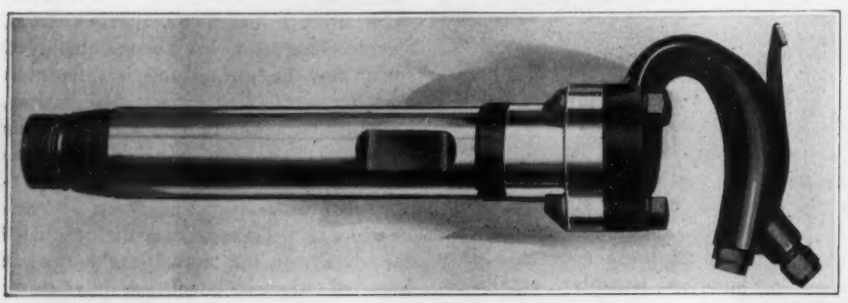
"shall and will" have been added. The chapter entitled "The Wrong Word" is new, as also is that on punctuation.

In its new edition the book is complete and will be found useful to all engineers. The text is arranged in 17 chapters and discusses in sequence the following: General principles; naturalness; clearness; precision; superlatives and the superfluous; it, one, where, while, since; the subjunctive, shall and will, and the possessive; relative pronouns; prepositions and preposition-verbs; hyphens and compound words; slovenliness; jargon; the wrong word; contruction; punctuation; composition; and style.

### Writes Treatise on Filing

*Filing Department Operation and Control*, by Ethel E. Scholfield, 318 pages, 5½ x 8¼ inches; cloth, published by the Ronald Press Co. and furnished by IRON TRADE REVIEW, Cleveland, for $3.

The author of this book has drawn on a broad experience as file systematizer with several large industrial companies and as lecturer and instructor with several schools of commerce. The result is an authoritative treatise on practical filing. The text matter is divided into 24 chapters dealing with the functions and purpose of filing, control, operating problems, transferring, selection and training employes for filing, selecting the proper filing system and detailed information for practical filing. The appendix contains valuable information on figures required in estimating space and material required for filing, suggestions as to the kind of paper best fitted for certain uses and a complete filing department manual. Thirty-eight illustrations are used in the book.



RIVETING HAMMER BUILT IN VARIOUS SIZES WITH STROKE RANGING FROM 5 TO 9 INCHES

### Code for Steel Products

*Bensinger's Iron and Steel Trade Code*, 120 pages, 7 x 9½ inches; keratol; published by C. Bensinger Co., New York, and furnished by IRON TRADE REVIEW, Cleveland, for $7.50 net.

This code book, which is in its first edition, is presented as a cable and telegraph code covering the iron and steel trade in general. Its author, N. H. Jacovatos, has been engaged in the iron and steel industry for many years. The book has been prepared with the view of saving cable expense in transactions with foreign companies in which long and technical specifications are necessary.

The code contains over 19,000 five-letter words with at least a two-letter variation, each word consecutively numbered. All words start with one of the vowels A, E, I, or U. If the five-letter word starts with any letter other than one of these four vowels it immediately can be assumed that the first letter is incorrect or that some other code has been used.

A mutilation table is presented which enables the user of the code to detect errors without the loss of time incurred in having a message repeated.

The code is prepared so as to indicate practically all chemical and physical properties of steel products as well as dimensions, shapes and other descriptive matter. Other important information such as instructions for marking, packing and shipping; gage; quality; inspection; etc., is covered by code words. The list of materials for which code words are given ranges from pig iron, semi-finished steel, and finished bars, plates, sheets, shapes, etc., to products such as bolts, nuts, nails, pipes, tubes, rivets, spikes, staples, washers, wheels, wire products and scrap.

## Rochester Engineers Meet

Louis W. Arny, secretary of the Leather Belting exchange, Philadephia, discussed "Belt Transmission and Leather Belting" on Wednesday night, Jan. 23, at a meeting of the Rochester section, American Society of Mechanical Engineers, held in the Carnegie building, University of Rochester, Rochester, N. Y. Mr. Arny's talk was both technical and commercial and was illustrated with lantern slides. Professor J. W. Gavett Jr. of the University of Rochester, and chairman of the Rochester section, who was that section's delegate at the annual convention last December, made a report of action taken at the meeting.

## Designs Riveting Hammer

The Ingersoll-Rand Co., 11 Broadway, New York, has developed a new type of pneumatic riveting hammer, the outstanding features of which are bolted construction for holding the handle of the barrel, heavy section valve with liberal bearing surfaces, combination poppet and piston type throttle valve, power in excess of ordinary requirements, low air consumption and easy operation.

This model of hammer is manufactured in three styles and is available in range of sizes from a 5 to 9-inch stroke. Three alloy steel bolts fitted with lock washers, hold the handle to the barrel. The throttle valve, except on models with inside trigger handles, is a combination of the piston and poppet types. The beveled seat, it is claimed, will remain tight throughout the life of the tool, preventing leakage. The throttle lever or trigger is made in one piece from special heat treated spring steel and has a long bearing in the handle, making it capable of withstanding lots of abuse. The control is sensitive, ranging from a light tap to a heavy blow, entirely at the will of the operator.

The valve is a sturdy sleeve made from special alloy steel. It operates in a valve box, located in the head of the barrel. The valve box is constructed with a solid end which enables it to be taken apart easily. The handles are drop forged to a shape that fits the hand and are sandblast finished. Either outside or inside trigger handles can be furnished, although the outside type is standard.

## Bureau Studies Reduction and Carburization

Observation made in experimental work on sponge iron and synthetic cast iron, performed by the department of the interior at the Seattle station of the bureau of mines, led to certain conclusions regarding reduction and carburization that differ in some respects from prevalent belief. These findings are being studied further. As a result of this work it would seem that it may be possible to produce low-carbon iron from the blast furnace. To obtain exact data on the combination of carbon with iron, reduction tests are being carried on with molten iron in contact with solid carbon and with gases.

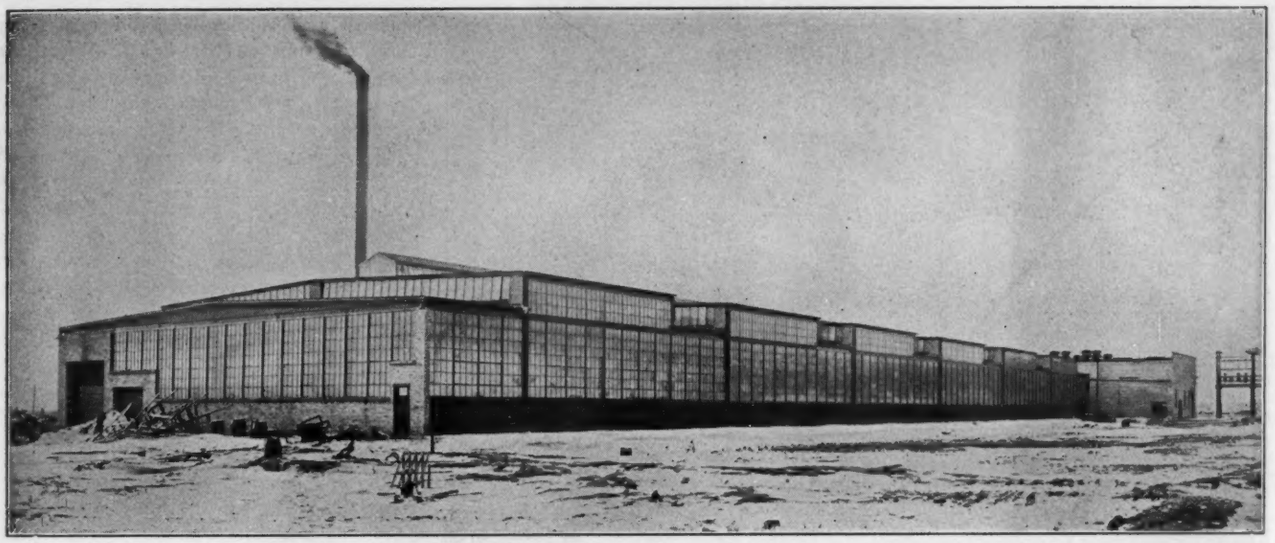


Fig. 1.—The glass area of the new mill building of the Acme Steel Goods Co. equals 48 per cent of its floor space

# Extends Cold Strip Making Facilities

BY E. H. BOEHRINGER

FROM automobile parts to shoe horns and from agricultural implements to curtain rods range the uses of cold rolled strip steel. Lumber, steel sheets and other metals, especially nonferrous ones, have given ground before its broadening consumption. Metal furniture, for the home as well as for the office, has come into favor largely because cold rolled strip steel takes a finish that deceives the expert in fine wood finishes and in addition is more durable, is not combustible and gives greater strength in a lighter section. In the automobile, cold rolled strip steel has supplanted some nonferrous metals on the basis of equal satisfaction at greatly reduced cost, while the high finish it takes makes it desirable for a score more of parts. A tremendous tonnage has also been going into metal tubing.

*The author is editorial representative at Chicago of* IRON TRADE REVIEW.

To meet this increasing demand for cold rolled strip steel the Acme Steel Goods Co., of Chicago, has just put into operation a new cold rolled unit at Riverdale, a southerly suburb of Chicago. Already the Acme company had at Riverdale an annual capacity of 70,000 to 80,000 tons of hot rolled strip and about 30,000 tons of cold rolled. Its

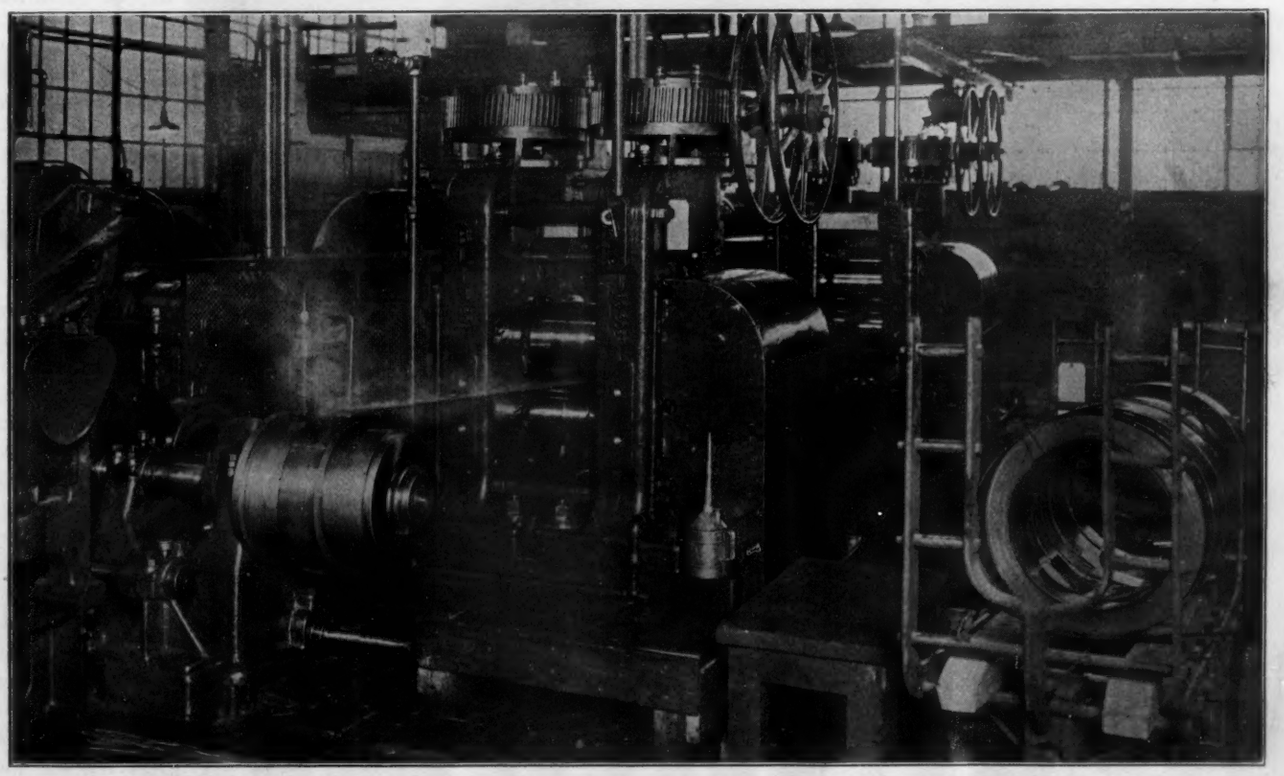


FIG. 2—THE 12-INCH BREAKDOWN MILL IN THE NEW COLD ROLLED STRIP PLANT AT RIVERDALE

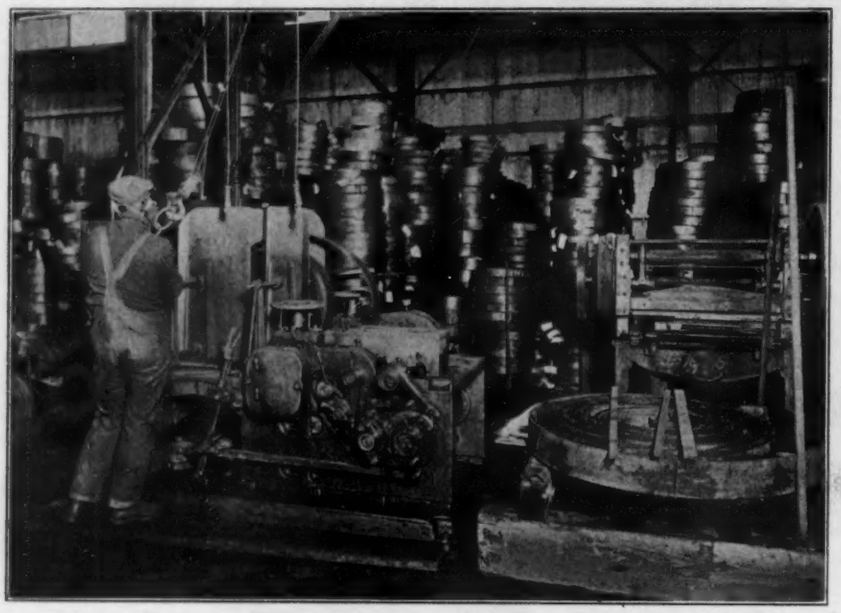


FIG 3--OPENING AND RE-COILING HOT ROLLED STRIP PREPARATORY TO COLD ROLLING. THE OPENED COILS ARE DEPOSITED ON CRADLES AND SENT TO THE PICKLING VAT

16 new mills at Riverdale, ranging from 10 to 16 inches, should add 30,000 tons to its annual cold rolled capacity. These mills comprise five 16-inch, six 12-inch and five 10-inch, all of the most modern design. They are housed in a structure 100 x 380 feet, lying parallel to a pickling and annealing building 70 x 420 feet.

Hot rolled strip up to 18 inches in width and 0.25 inch thick is the raw material for the cold rolling unit. Since the hot rolled mill of the Acme company at Riverdale produces strips only up to 3 inches wide, material exceeding this in width must be purchased. The hot rolled strip is unloaded from cars on an inside railroad track at one end of the pickling and annealing building and is stored alongside the track. Two re-coiling machines, especially built by the Acme company, open the strips in spiral formation, preliminary to pickling. On leaving the re-coiling machine the opened coil is deposited on a pickling cradle by an electric hoist. When the cradle has been loaded to capacity it is immersed in the pickling vat by a 10-ton overhead crane. From the pickling vat the cradle goes to the cold water vat and thence to the hot water vat, where the strip gets its final rinsing and by reason of the temperature of the water dries quickly when exposed. Special conveyors take the pickled strip to the entering side of the cold rolling building. The pickling equipment consists of two acid vats, 6 x 6 x 20 feet, one cold and one hot water vat, each of the same dimensions as the acid vats, and the necessary cradles.

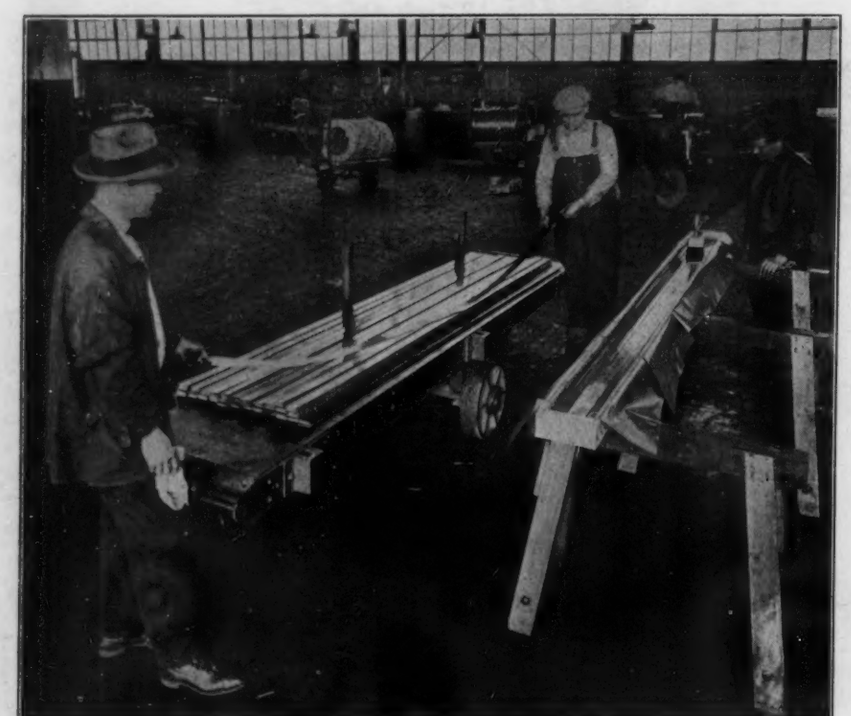


FIG. 4—OILING, WRAPPING AND BOXING COLD ROLLED STRIP. THE STRIP BEING PACKED IS 12 FEET LONG, 2 INCHES WIDE AND 0.35-INCH THICK

After pickling, the hot rolled strip steel is conveyed to the cold rolling building which lies parallel to the pickling and annealing building. Four of the 16-inch mills are arranged in continuous train formation, and may be operated in sets of two or four. The fifth is single. Four of the six 12-inch mills are in continuous train formation, to be operated in sets of two or four. The single units may be operated alone or in a set of two. The four 10-inch mills in continuous train formation may be operated singly or in a set of two, three and four. All of the stands are equipped with quick-acting, collapsible takeup blocks. The mills are equipped with three-roll coilers, which are used when nesting bundles, two in one or three in one, for annealing. Each train of mills is equipped with a master control panel, from which any or all may be started, stopped or varied in speed. On each housing is a push-button station from which the set of rolls carried in that housing may be started, stopped or varied in speed. Each mill is direct motor-driven, with 250-horsepower motors on the 16-inch mills, 150-horsepower motors on the 12-inch mills, and 100-horsepower motors on the 10-inch mills.

These mills cold roll the strip down to the annealing point or to the finished size in the case of the harder tempers. If the steel is to be annealed it is delivered to the annealing building where it is loaded on specially constructed steel bases, 4½ by 20 feet, covered by one or two steel covers, sand sealed and charged into the furnaces. The annealing equipment is at the end of the pickling and annealing building opposite from the strip storage and re-coiling machinery. The five-chamber annealing unit is coal fired. An atmospheric gas producer and the requisite scrubbing and drying equipment, along with a compressor and two storage tanks, provide the dry, clean gas, necessary for the annealing and cooling operation. An

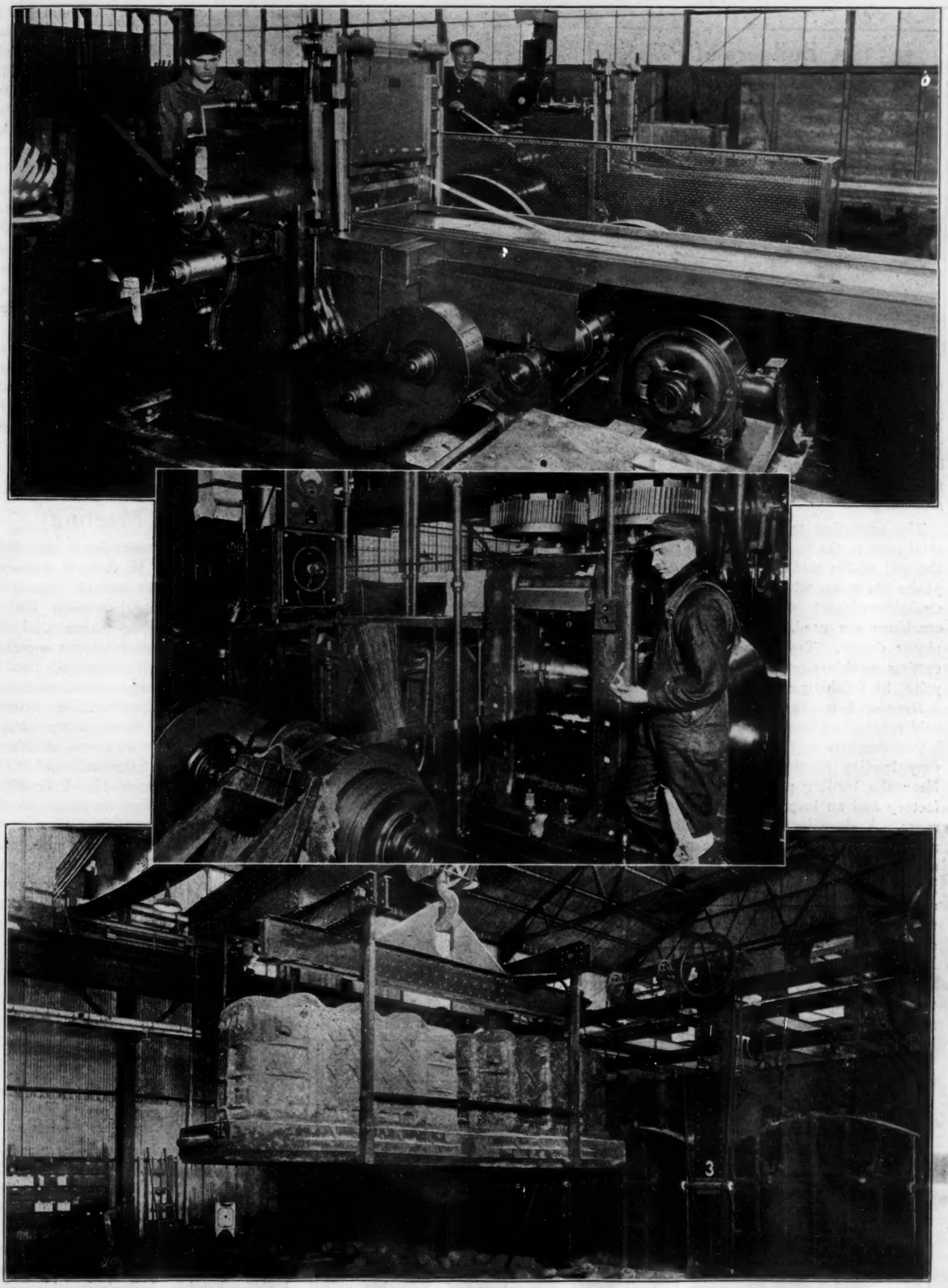


FIG. 5 (TOP)—TWO STRAIGHTENING AND CUTTING MACHINES. THE LARGER, IN THE FOREGROUND, CUTS STRIP UP TO 18 INCHES WIDE AND ¼-INCH THICK—FIG. 6—RHEOSTATIC CONTROL IS A FEATURE OF THIS 12-INCH FINISHING MILL, THE STRIP IS BEING OILED TO PREVENT RUSTING—FIG. 7 (BOTTOM)—THE ANNEALING FURNACES OF THE SMALLWOOD TYPE REPRESENT THE THIRD INSTALLATION OF THEIR KIND IN THE UNITED STATES. THE CHARGING MACHINE AND GRAPPLING DEVICE ARE OF NEW DESIGN

## Builders of Principal Equipment

Mills and auxiliary equipment, E. W. Bliss & Co., Brooklyn, N. Y.
Electrical equipment, General Electric Co., Schenectady, N. Y.
Thirty-ton and 10-ton overhead cranes, Whiting Corp., Harvey, Ill.
Annealing unit, American Industrial Furnace Corp., Boston.
Annealing boxes and bases, United Engineering & Foundry Co., Pittsburgh, and the Union Steel Castings Co., Pittsburgh.
Annealing furnace charging machine, United Engineering & Foundry Co., Pittsburgh.
Slitting machines, E. W. Bliss & Co., Brooklyn, N. Y., and Waterbury-Farrell Foundry & Machine Co., Waterbury, Conn.
Oiling and buffing machine, steel trucks, edge-rolling machine and breaker, Broden & Dailey Construction Co., Cleveland.
Straightening and cutting machines, Hallden Machine Co., Waterbury, Conn.
Tractor, Automatic Transportation Co., Buffalo, N. Y.
Jib crane, Elwell-Barker Electric Co., Cleveland.
Roll grinder, Landis Tool Co., Waynesboro, Pa.

oiling and buffing machine is provided for oiling stock after annealing or buffing it when specified by customers. In the center of the pickling and annealing building is ample cooling space with the necessary gas piping for cooling after annealing.

The annealing cycle completed, the steel goes to the finishing department in the end of the cold rolling building opposite the mills, where it is rolled, slit, straightened and cut. Three slitting machines are used, each being direct-motor driven. Two straightening and cutting machines and one breaker comprise the finishing equipment.

Depressed tracks at the end of the cold rolling building adjacent to the finishing department make for speedy and easy loading of the finished product. Near the loading platforms are a box factory and an inspection and packing room. A close inspection precedes the shipment of all material. One piece of steel from every 2000 pounds is subjected to physical tests. In the cold rolling building is a complete physical testing room equipped for such necessary tests as scleroscopic, brinnel, Erickson and tensile strength.

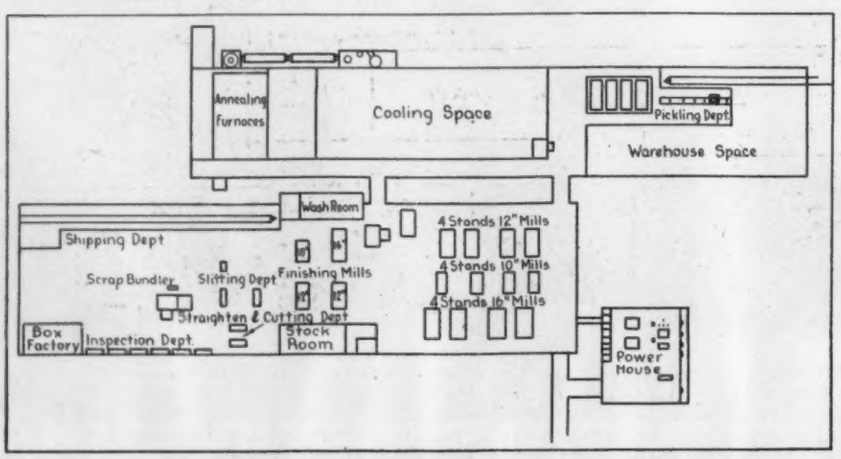
The roll grinder, 20 x 96 inches, automatically shapes the rolls concave or convex during the grinding operation. An edge rolling machine is utilized for producing a round or a square edge on the strip. The machine shop, which is located at the side of the cold rolling building, is equipped with miscellaneous tools. The pickling and annealing building is of structural steel with sheet metal walls and roofs, the walls being removable in hot weather. The cold rolling building is of structural steel with continuous sash and has brick trim.

Cold rolled strip steel is a high grade product which requires that it be produced under exceptional lighting conditions. Accordingly, the glass area of the cold rolling building is equivalent to 48 per cent of its floor area.

Electric power enters the new cold rolled mill at 12,000 volts, alternating current and is transformed and stepped down to 250 volts direct current in a 60 x 60-foot substation. This change is accomplished by means of two 1050-kilovolt-ampere transformers and two 1000-kilowatt rotary converters. The power substation is of brick with a cement-tile roof.

The Acme Steel Goods Co., which was organized in 1880, is the first in the Chicago district to produce cold rolled strip steel in a full range of sizes, finishes, edges and tempers. Its original plant was on Archer avenue, Chicago, but in 1918 the demand for light cold rolled strip became so great a hot rolled mill was established in Riverdale to provide material for the Archer avenue plant. In the Riverdale hot rolled mill, billets 30 feet long and 1½ to 2 inches square are reduced to continuous length strips, 11 to 23 gage and 1 to 2½ inches wide. The steel is finished at the rate of 2500 to 3000 feet a minute in coils up to 2200 feet in length. Steel box and bale band, steel corrugated fasteners and all forms of light strip steel comprise the product of the Acme company. Nailless strapping is one of its special lines.

Officers of the Acme company are: Chairman of the board, James A. MacMurray; president, R. H. Norton; vice presidents, F. C. Gifford and Donald MacMurray; and secretary, Charles S. Traer.




PLAN OF NEW COLD ROLLING UNIT AT RIVERDALE

## J. M. & L. A. Osborne Holds Annual Meeting

Executives, department heads and their assistants of the J. M. & L. A. Osborne Co., Cleveland, sheet and tin plate jobber, held their annual meeting Jan. 9 to 11. A. W. Howe, chairman of the Harmony club, sponsor of the meeting, presided. The opening session, Jan. 9, was given over to reports and subsequent discussion by the advertising counsel and the purchasing agent on the respective topics, "Advertising as a Means of Assisting the Salesman" and "The Purchasing Department, its Difficulties." The next day they were guests of the Superior Sheet Steel Co., Canton, O. where after a tour of the mills, they were addressed by H. A. Roemer, general manager of the Superior company.

"Terne plate," Copper and Solder, "Manufacturing Department Products," and other such topics were discussed at the last session of the annual meeting. The annual banquet was held at the Cleveland Athletic club where J. F. Reichert was elected chairman of the Harmony club; J. A. Decker, vice chairman; Elmer Thorpe, secretary, and M. J. Doering, treasurer.

## Glasgow Adds Capacity

The Glasgow Iron Co. is preparing to resume operations shortly at its 112-inch plate mill at Pottstown, Pa. This mill is the property of the Pottstown Iron Co. and is operated under lease by the Glasgow company. It has been idle about two years. A new mill building has been built during this period. The Glasgow company is considering resuming operations at its Hope puddling plant at Pottstown also. It is operating its puddling plant and plate mill at Glasgow, Pa.

# Aggressive Campaign Adopted

## Structural Steel Fabricators Institute Four-Year Program for Future Expansion Based on Constructive Co-operation and Adopt New Code of Practice and Standard Contract—Review of Third Annual Convention

THAT the adoption of standard specifications for structural steel will save millions and have far-reaching effects in facilitating the erection of bridges was forecast at the third annual convention of the American Institute of Steel Construction at the William Penn hotel, Pittsburgh, Jan. 23 and 24. More than 150 companies which specialize on bridge and building construction were represented and agreed on standardization.

Delegates were welcomed on behalf of Pittsburgh by Harold Irons, city solicitor, who called attention to the fact that the fabrication of steel is distinctly an American process. He alluded to how fabricated steel frame buildings had withstood earthquake shock as in the recent disaster in Japan. J. L. Kimbrough, Indiana Bridge Co., Muncie, Ind., president of the institute, presided at the opening session Wednesday morning and pointed out that the past year had been successful for the fabricating industry. He stated, however, the industry has suffered because of innumerable specifications supplied by individual manufacturers in the absence of standard specifications and for this reason efforts were being made by the institute to bring about standard specifications for all companies members of the institute.

### Speaks on Traffic Conditions

Following the report of the treasurer, presented by W. M. Wood, Mississippi Valley Structural Steel Co., Decatur, Ill., a report of the traffic committee was submitted by M. T. S. Orner, Pittsburgh Bridge & Iron Co., Pittsburgh, chairman of the committee. After summarizing the activities of that body in protecting members from increased freight rates, changes in tariffs, freight classifications, etc., he announced the interstate commerce commission at present is considering briefs filed following the November hearings in Pittsburgh on the subject of increased freight charges for short hauls of iron and steel but stated he believed the commission finally would issue an order forbidding the increase asked by the carriers.

Progress of the standard specifications plan recommended by the institute was presented by Lee H. Miller, chief engineer, American Institute of Steel Construction. This report was received as the most important feature of the convention, resulting in prolonged discussion. In explaining this plan, Mr. Miller asserted it was the first real program for reducing building costs that ever had been laid before the country. He declared in New York alone, where 1,000,000 tons of steel are used annually, not all of it for building construction, a saving of $2 per capita could be effected. Continuing, he said the adoption of standard specifications for the use of steel throughout the country would result in saving $70,000,000 to $80,000,000 annually. He directed attention to the fact that the specifications were being used by many cities in this country including Erie, Pa.; Providence, R. I.; Newark and Montclair, N. J.; Boston, and with minor reservations, Washington and Baltimore.

Participating in the discussion on standard specifications, E. F. Kelley, United States department of agriculture, chairman of the committee of the American Association of State Highway officials, pointed out that in bridge engineering two fields exist in which standardization may be applied to advantage, namely, specifications and design. In the two fields, he stated, the greater advantage lies in standard specifications on account of their wider application and their use is not limited to any locality. Nearly all state highway departments use standard specifications, Mr. Kelley said, while many use standard designs to a limited extent. The use of the latter, he continued, is necessarily limited somewhat by topography and they may be used to the greatest advantage in sections where the topography is fairly uniform.

A luncheon closed the first morning's session, following which George H. Charls, vice president and general manager, United Alloy Steel Corp., Canton, O., spoke on "Building for the Future in the Structural Steel Industry." Mr. Charls insisted that the hour is here for a momentous awakening of producer and fabricator of steel to the fact that new sales effort, and up-to-date efficient advertising and persistent educational propaganda, must be used if steel is to continue to dominate the age. He stated that institutional effort to raise the standard, ethics and volume of business in a permanent manner must be prompted and guided by honesty of purpose and real service.

At the afternoon session Charles F. Abbott, executive director of the institute, presented a four-year program calling for the expenditure of $75,000 or more annually. H. B. Hirsh, Belmont Iron Works, Philadelphia, proposed the present assessment of 5 cents a ton on production be continued, that if through increased membership and other support of a financial nature a larger sum becomes available, or directors are sufficiently encouraged, that they obtain by letter ballot the vote of the entire membership on the matter of increasing the assessment to 10 cents a ton on production to speed up this program. The resolutions were adopted unanimously. The program, as presented by Mr. Abbott, embodies an increase in membership to include all progressive fabricators; adoption of the institute's new standard specifications; the inauguration of a broad educational publicity campaign to extend the use of structural steel; special booklets to engineers, architects and builders; co-operation with technical schools and colleges; exhibitions, speeches, personal contact and motion pictures; a uniform method of computing costs; improved selling methods; trade practices and standards; traffic and legislative problems; and research and reference.

### Emphasizes Value of Publicity

The first afternoon's session was closed by an address by J. D. Ellsworth, advertising director of the American Telephone & Telegraph Co., New York, who spoke on "The Benefits That Can Be Derived Through Educational Publicity." He directed attention to the fact that modern improvements during the last 40 years have changed American habits. Most of us no longer are local in interests and activities. Developments in transportation and communication, in steam and electricity, in mass production and in financing facilities, as emphasized by Mr. Ellsworth, have given to many lines of business a national and even an international market. Continuing, he stated the merchant no longer knows his customer, nor the manufacturer his employes, let alone the customers of his product. Business of all kinds, he asserted, is organized on a big scale and can no longer be advertised by word of mouth.

A new kind of publicity has become necessary, Mr. Ellsworth asserted, a publicity to establish the reputation of a particular business. One phase of it

is called institutional advertising to differentiate it from direct sales advertising. Its purpose is to make the public acquainted with a business enterprise, an industry or a financial project so that people generally will give it their confidence and patronage. In conclusion, he declared any business or industry without publicity will fall short of its best success and with the right sort of publicity a worthy business or industry can have the strength of the nation behind it.

At the annual banquet in the William Penn hotel following sessions of the first day a letter from President Calvin Coolidge expressing admiration and high esteem for the accomplishments of the organization was read by Mr. Abbott, executive director of the institute. In speaking on "The Business of Good Citizenship" Russell R. Whitman, president of the *New York Commercial*, New York, urged good citizenship to get behind Secretary Mellon and see that his tax plan is adopted by congress.

Scientific investigations of the nature and effect of strain and its application to future building operations were related by John W. Doty, president of the Foundation Co., New York, who spoke on "The Story of the Japanese Earthquake and Its Influence on a Program for Better Buildings." An editorial by Arthur Brisbane, who was to have spoken at the banquet but could not be present, was read by Mr. Kimbrough, president of the institute.

### Urges Co-Operative Control

At the opening session Thursday morning President Kimbrough introduced John G. Jones, vice president of the Alexander Hamilton Institute, New York, whose address on "Selling as Applied to Contract Work," commanded prolonged applause. Mr. Jones emphasized that the problem of selling is one of standardization and education. He pointed out that different specifications exist in every city with which the structural industry has to contend and that no successful sales campaign can be carried out without co-operative control. In urging the structural industry to get together on a competitive co-operative basis to obtain proper recognition he cited the fact that the structural industry during last year did close to $300,000,000 worth of business. He implored the industry to put its business on a basis of safety. Serve notice on the architects and builders, he continued, that there are certain standards and practices that must be followed if economies are to be gained.

He warned the delegates that unfair practices undermine the ethics of buyers and advocated an educational publicity program which effectively closes the ranks of an industry. Selling merely on price, he stated, places one always at the mercy of the buyer and better salesmanship will be built up in the structural steel industry whenever service, delivery and attention to detail are considered of prime importance. In conclusion Mr. Jones predicted that fireproof barns of structural steel and allied materials on standard designs will dot the American farms of the future and steel will be universally used in construction of a better kind of American house before many years have passed provided steel fabricators get together and realize the future of their product.

Major problems confronting most American industries are problems of the market according to H. J. Kenner, president of the Better Business bureau, New York, speaking on "Trade Customs and Business Ethics." He asserted three out of four of these problems depend for successful solution upon turning customs and rule-of-thumb policies into codes of ethical conduct.

Of the factors for trade disturbance, which have attracted attention, none is more discussed than price-cutting. The latter is an economic good when it benefits the public without injury to the trade but price-cutting to snatch business without production cost or sales cost justification, is unjust discrimination and an unfair practice. It may react on the price cutter, he stated, and inevitably increases his costs and decreases his profits but unfortunately his fellows suffer with him and the practice is of trade consequence and concern.

Continuing he pointed out that lack of uniformity in terms and conditions of contracts is worthy of study in any field. Deliberate repudiation of contracts and heedless buying makes necessary the establishment of contract standards which will reduce waste through that channel and restore the merchandise contract to its pristine status of an honored and respected instrument. Loose practices in business proposals and contractural relations breed suspicion between buyer and seller, create distrust of business and set up sales resistance which adds materially to selling costs.

Public confidence was cited by Mr. Kenner as being the common property of all business. It does not belong to any one firm, even as applied to that concern's own patronage. When it is injured by wrong practice by any one business, all business is harmed by the suspicion and prejudice engendered, because the sum total of confidence is reduced and each firm's and industry's proportionate share in the common holding has been lessened in value. Common business sense demands that the resources stored in the cumulative good will of American business be regarded as a sacred trust of which every man in business is an executor and that he make it his duty to see that it is not impaired through him or by the piracy or sloth of others so far as it is within his power to prevent.

A report of the committee on standard practice and standard proposal and contract for structural steel work, ornamental steel and iron work and miscellaneous steel and iron work was presented by W. M. Wood, chairman of the committee and president of the Mississippi Valley Structural Steel Co., Decatur, Ill. He stated that since the use of structural steel came into existence about 35 years ago, an industry has developed which is furnishing at present over $300,000,000 worth of material to the public.

### Uniform Practice Is Desired

During this period of evolution, he continued, it is obvious that many undesirable practices should have come into existence and the American Institute of Steel Construction, representing the industry between the rolling mills and the buying public, has undertaken the task of codifying conditions with a view of establishing uniform practice. Standard specifications on the design, fabrication and erection of structural steel, he continued, are being received with widespread approval and we now are submitting this code of practice to cover conditions not touched in the specification itself.

After discussion the institute approved a plan whereby the code of practice is to be put into effect when the directors may choose. Thursday morning's session closed with a luncheon at which the principal address was by James A. Emery, general counsel of the National Association of Manufacturers and the National Industrial Council, Washington, on "Some of the Benefits of Industrial Co-operation." The final session was opened by E. W. McCullough, manager of fabricated production department of the chamber of commerce of the United States of America, Washington, who spoke on "Some Wastes in Industry." The speaker was followed by Walter Drew, counsel for the National Erectors' Association, New York who outlined "A Future for the Structural Steel Industry."

Five directors were elected for three years, including H. B. Hirsh, Belmont Iron Works, Philadelphia; L. L. Gadd, Levering & Garrigues Co, New York; E. W. Krueger, Worden-Allen Co., Milwaukee; C. N. Fitts, New England Structural Co., Boston; and E. S. Mattice, Canadian Vickers, Ltd. Prior to adjournment it was voted to hold the next annual meeting at French Lick Springs, Ind., during November. Officers will be elected when the board of directors meets next month.

# Discuss Management Problems

## Greater Application of Human Engineering in Handling of Employes Urged by Taylor Society at Its Annual Meeting in New York—Psychology an Aid in Creating Confidence and Trust in Employers

EXPERTS in scientific management are getting away from the purely mechanistic attitude of the past 20 years and now are viewing problems in management more from the standpoint of human engineering. Expressions recognizing this tendency, and the need for further development along this line were the features of the annual meeting of the Taylor society held in New York, Jan. 24-26. It was pointed out that leadership and personality are tremendous assets in management and that a broader view indicates that management not only is a science but an art. In conjunction with the remarks on leadership and personality, it was pointed out also that management experts have devoted too little consideration to psychology. Man, it was stated, is an emotional creature and his incentive can be stirred through other instincts than the desire for gain. A primary function of management is the necessity for creating in the workers full confidence and trust in their employers, and this function can be discharged only with adequate consideration of the psychological factors involved. The subject of management was considered in these and various other ways from the standpoint of human engineering.

### Psychology an Important Factor

Perhaps the chief address on the psychology involved was that by John H. Williams. Mr. Williams' paper was intended to discuss scientific management and general administrative control. He defined scientific management as having to do with the design, selection, and operation of means to a given end, but always with reference to a more or less limited objective, while general administrative control is concerned primarily with reconciling and adjusting the opposing tendencies involved in the accomplishment of the various objectives of the management. As an instance, when the price of a product is increased, the profit per unit increases but the number of units sold decreases. The problem as to whether a large volume of business at small unit profit or a small volume of business at large unit profit is preferable is one for the general administrative control. Scientific management should not be permitted to encroach on the administration in decisions of this character.

Mr. Williams then spoke on psychology, saying it was the essence of both management and administration. Psychology is to administrative control, what metallurgy is to the steel business. The investiture of authority has a desirable effect on the egotistical reactions of workmen, but this is only a suggestion to the extent to which psychology can be employed, Mr. Williams stated, because man is primarily emotional and responds to psychology.

### Personality in Management Necessary

H. H. Farquhar presented a masterly paper, summarizing and analyzing the principles of the late Frederick W. Taylor. Outstanding among these principles is the belief that the interests of employer and employe are mutual, and that the principal object of management should be maximum prosperity for the employer and employe. Mr. Farquhar questioned whether sufficient emphasis had been given to the value of personality in management. Every system, no matter how beautiful in conception, requires human direction and control. In many instances, said Mr. Farquhar, there continues a pronounced mechanistic attitude and unskilled clerks too frequently are entrusted with work which requires real leadership. Mr. Farquhar deplored the fact that Mr. Taylor so frequently emphasized the profit motive on the part of workmen, saying that there are other instincts and motives. American labor is not lazy, he said, and it will give the best results if convinced that the management is doing its part and has the interests of the men at heart. Mr. Farquhar's paper, incidentally, contained a complete summary of the many advantages which have accrued to employers, employes and the public in the last two decades from the development and application of the principles of scientific management.

Stuart Cowan divided the country's purchases into three groups. The first includes the general products which are bought by 106,000,000 consumers in this country. The second group includes commercial purchases by approximately 1,000,000 establishments. The third includes industrial purchases by approximately 300,000 manufacturing enterprises and is comprised of parts, materials, equipment and supplies. Mr. Cowan told how he would correlate advertising and sales promotional work in various kinds of products and particularly with reference to those bought by the 106,000,000 consumer group. His paper brought out clearly the fact that advertising must be developed along engineering lines.

G. V. S. Carroll made an interesting statement in commenting on the advertising of the Dennison Mfg. Co. The company has a policy of increasing the amount of advertising as soon as business begins to fall off, and the results have proved this policy to be well founded. Philip J. Reilley also gave a lengthy discussion in which he told how the principles of scientific management have been applied to retail problems by the Retail Research association.

H. P. Kendall addressed the society on the merits of various types of management. His comments covered unsystematized, systematized and scientific managements. Mary Gilson, Joseph & Feiss Co., Cleveland, submitted a thorough paper discussing personnel work in scientific management. Morris L. Cooke, Philadelphia, discussed scientific management in federal, state and municipal business. Frank B. Gilbreth and Lillian M. Gilbreth, reported on the extent to which the principles of scientific management have been adopted in countries other than the United States. The authors stated that the principles of scientific management had met with widespread adoption in the more industrial of the European countries and said that marked progress is being made. Much American literature on the subject has been transmitted into various European languages. In Spain, recently, a system has been devised where boys are examined in various ways to determine their aptitude and capacity for different vocations. Japanese students are grasping the principles of scientific management eagerly and China also has made some progress along this line.

Richard A. Feiss, Joseph & Feiss Co., Cleveland, was re-elected president of the Taylor society for the ensuing year. Percy S. Brown was elected vice president for two years. Edward W. Clark 3rd, was elected treasurer. Mary Van Kleeck and William B. Ricketts were elected to the board of directors for two years.

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The French government has decided to continue the turnover sales tax, rejecting proposed reforms, including a production tax, as a substitute, according to a report received

from the department of commerce from Commercial Attache Jones, at Paris.

In February of last year the French senate proposed to replace the business turnover tax, adopted in 1919, when the French treasury deficit was 42,000,000,000 francs, by a tax on production in the case of coal, and passed the measure. The bill failed in the house, but on reconsideration the finance committee of the house favored the production tax basis for taxing coal and apparently for taxing grain and livestock as well. The government, however, has come out against any reforms, pointing out that the turnover tax has brought in an income which has steadily increased from about 1,000,000,000 francs in its first year to more than 3,000,000,000 in 1923.

# Safety Organizations To Consolidate

A PROPOSAL for the consolidation of the American Society of Safety Engineers and the National Safety council was unanimously approved by members of the two organizations at their recent joint meeting in the Engineering Societies building, New York. While maintaining its present identity, the American Society of Safety Engineers will become the engineering section of the National Safety council. The actual consolidation will take place this fall at the time of 1924 annual safety congress. Meanwhile, a joint committee will draft the constitution and by-laws, and work out the other necessary details. Officers will be elected at the annual safety congress.

Membership qualifications are to be based on those now in effect in both engineering organizations. The nominating committee for the next five years will consist of two past presidents of the American Society of Safety Engineers and two past chairman of the engineering section of the National Safety council.

Newly elected executive officers of the American Society of Safety Engineers are as follows: President, A. J. Van Brunt, director of safety education, the Public Service Corp. of New Jersey, Newark, N. J.; vice presidents, these members to hold office for two years: W. G. King, director of the safety division of the American Optical Co., New York and M. C. Goodspeed, safety engineer of the General Electric Co., Erie, Pa.; and honorary secretary, Calvin W. Rice, secretary of the American Society of Mechanical Engineers, New York.

The opening session of the convention was devoted largely to the discussion of accidents in the handling of materials. George C. Agry, assistant industrial sales manager of the Lamson Co., Syracuse, N. J., presented a paper designed to demonstrate the efficiency of conveyors as safety measures. Mechanical equipment, he pointed out, reduces in direct relation to production the number of men employed, replacing particularly unskilled foreign labor, who oftentimes are unfamiliar with the English language and for that reason are more susceptible to accident. By use of conveyors it is possible to accomplish a unit movement of high frequency with little or no reciprocation as it the case in hand movements. This reduces congestion in the aisles or along docks, where the movement of individuals in counter directions invites collision. With the proper arrangement of conveying equipment comes the ease and efficiency which reduces fatigue.

He spoke of the advantages of conveying equipment in high temperature areas and in the handling of hot metals, hazardous both from the standpoint of health and accident. Mr. Agry said that circular conveyors now have been developed which are of considerable use in foundries. They bring small molds directly under a fixed pouring position in uniform time, which eliminates the accidental spillage of the metal.

He pointed to the great possibilities in the handling of chemicals, by the use of proper conveyors. Carbuoys containing acids or caustics can be carried, he said, with the maximum of safety because of the elimination of shock to the glass containers. Overhead conveyors are good for the immersing of parts for cleaning, pickling, etc., he asserted.

Safety advantages of tube conveyors also were pointed out by Mr. Agry. They afford a means of communicatoin throughout a plant which precludes the necessity of employing messengers, who usually are young and more or less careless. In some lines of manufacture, such as cartridges, tube conveyors afford one of the few safe methods in the transportation of materials, he said.

Other features of the morning program were addresses by A. L. Lewis, president of the Lewis Shepard Co., Boston, on "Eliminating Material Handling by Use of Trucks, Including Lift Trucks," and by David S. Beyer, vice president of the Liberty Mutual Insurance Co., Boston, who spoke on "Causes of Accidents in Handling Material."

The afternoon program included addresses by H. D. Deyoe, General Electric Co., Schenectady, N. Y., on "Safety in Electric Welding and Cutting"; by H. S. Smith, of the Union Carbide & Carbon Corp., New York, on "Safety in Gas Welding and Cutting"; and by Charles Sheare, Research Laboratories, American Optical Co., Southbridge, Mass., on "Glare, What It is—What It Does."

An informal dinner was held in the evening, with George T. Fonda of the Columbia Salvage Corp., presiding. A leading address was that of Loyal A. Shoudy, chief surgeon of the Bethlehem Steel Corp.

## Receivers Are Named for Atlas Steel Corp.

An equity conservation action against the Atlas Steel Corp., Dunkirk. N. Y., on behalf of itself and other creditors, has been brought by the Youngstown Printing Co., Youngstown, O. The suit is regarded as a friendly action. Federal Judge Hazel, Buffalo, has appointed John Lord O'Brien, Louis J. Campbell, and Harry E. Nichols as receivers of the company. Mr. Campbell is president and Mr. Nichols is treasurer of the company. The assets are mentioned at over $8,600,000 and the liabilities at less than $6,500,000. The bill of complaint states that the company is solvent but cannot meet its debts as they mature during the ordinary course of business. The court's action restrains all actions against the company and authorizes the receivers to continue business as a going concern.

A statement by President Campbell says:

"The receivership was not designed to liquidate the corporation but to stabilize its affairs until a financial program for working out the ultimate salvation of the company could be agreed upon. It is the intention to keep the corporation going."

There is no connection between the Atlas Steel Corp. and the Atlas Steel Casting Co., Buffalo, N. Y., manufacturer of acid open-hearth steel castings. The receivership of the former company in no way affects the latter.

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For the months of October and November, Laconia Car Co., Laconia, N. H., earnings were at the rate of $10.70 a share on preferred stock. This was from foundry work and odd repair jobs alone. Cash in 60 days increased from $82,000 to $265,000.

# Men of Industry

**Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise**

BALFRID E. MATTSSON, production engineer of the Sandiken Iron & Steel Works, Sweden, is returning to Sweden after visiting America on a joint mission for the Swedish Iron Masters' association and the Royal Swedish board of trade to study American iron and steel industry.

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W. C. Potter, president the Guaranty Trust Co., New York, has been made a director of the Bethlehem Steel Corp. to succeed President Harold Stanley of the same institution, who resigned.

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H. O. Pond, son of the late C. H. Pond, has succeeded his father as president of the Scranton Forging Co., Scranton, Pa. H. O. Pond was previously vice president.

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Earl E. Bates recently has been appointed assistant sales manager of A. M. Castle & Co., 1300-1600 North Branch street, Chicago, dealer in iron and steel. He will assist Leonard J. Quetsch, the present sales manager.

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L. H. Collinwood, recently connected with the American Foundry & Construction Co., Pittsburgh, as assistant manager of sales, was associated for nine years with the Pittsburgh office of the Pittsburgh Piping & Equipment Co.

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Norval A. Hawkins, for many years general consultant of General Motors Corp., Detroit, has resigned. For the past two years he has been in charge of sales advertising and service. As an automotive engineer Mr. Hawkins is widely known.

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J. E. Laurencelle, recently connected with the New York sales force of the American Foundry & Construction Co., Pittsburgh, was formerly with the Audiffren Refrigerating Machine Co. Mr. Laurencelle was graduated from McGill university, in 1912.

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James H. Hughes, assistant general manager of sales for Apollo Steel Co, Apollo, Pa., has resigned. Mr. Hughes has not yet announced his plans for the future. He was identified formerly with Timken Roller Bearing Co., Canton, O., and with the Carnegie Steel Co., Cleveland district.

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Glenn A. Wilson, formerly representative of the Mutual Electric & Machine Co., Detroit, has been appointed

GEORGE A. BARCLAY
Recently Appointed Superintendent of Rolling Mills at Lackawanna Plant of Bethlehem Steel Co.

manager of the New York and New England territory of the Gibb Instrument Co., Bay City, Mich., manufacturer of electric welding equipment. Mr. Wilson's headquarters will be at 120 Liberty street.

* * *

Clarence E. Earl, president and director of the National Motors Corp., Chicago, has resigned from that company. Walter M. Anthony has resigned as vice president, treasurer and director, and Walter J. Mery as secretary and director. These officers held corresponding positions in the National Motors, Inc., subsidiary of the National corporation.

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John R. Lee, formerly executive of the Ford Motor Co., and later with the Wills-St. Claire Co., Marysville, Mich., has been appointed assistant to the president of Dodge Bros., motor car manufacturer. Recently Mr. Lee has been in charge of the Canadian branch of Dodge Bros. Mr. Lee was one of the originators of the welfare work conducted by the Ford Motor Co.

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Sterling W. Hubbard, several years ago representative at Cleveland for Rogers, Brown & Co., and since then in California for that company, recently was elected director of the First National bank of Santa Barbara, Cal.

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A. Rhydderch who has been connected with the research and technical staff of Hadfields, Ltd., Sheffield, Eng., has resigned to accept the management of the Abbeydale steel foundry of Robert Hyde & Sons, Ltd., Sheffield. Under Mr. Rhydderch's direction a specialty will be made of the production of high permeability steel castings for electrical purposes in addition to steel castings having standard qualities.

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J. G. Pearce of the laboratory of Metropolitan Vickers Electrical Co., Ltd., Trafford Park, Manchester, England, has been appointed director of research of the British Cast Iron Research association to succeed Dr. Percy Longmuir who resigned a few months ago on account of ill health. Mr. Pearce, who is a graduate of Birmingham university, has been attached to the scientific staff of the Metropolitan Vickers company for several years and has made a special study of nonferrous metals and iron castings for electrical machinery. He will make his headquarters at the Birmingham office of the research association.

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William C. Buell Jr., who recently became connected with the Chapman Engineering Co., Mt. Vernon, O., combustion engineer, was formerly associated with Buell, Schieb, Mueller, Inc., a company specializing in furnace design and investigation of various fuel factors. Previous to that he was chief engineer for Tate-Jones & Co., Inc., Pittsburgh, in charge of design, erection, estimating and laboratory. From 1904 to

1914 he served as engineer for the Westmacott Furnace Co. Mr. Buell is a member of the American Society of Mechanical Engineers, Society of American Military Engineers, and the Engineers Society of Western Pennsylvania.

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Victor Hybinette, inventor of a heat enduring alloy, now is connected with the Calorizing Co., Pittsburgh, in a consulting capacity.

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W. S. Ferguson, president of W. S. Ferguson Co., Cleveland, architect and engineer, has been selected as service director for that city by the new municipal administration.

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G. T. Overholt of Scottdale, Pa., for the past two years in the Chicago office of the United States Cast Iron Pipe & Foundry Co., on Jan. 1 became manager of the New York office of the company.

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William P. Belden, general counsel, Cleveland-Cliffs Iron Co., has resigned, and will be associated with Horace Andrews in the practice of law, 1882 Union Trust building, Cleveland, effective Feb. 1. The firm's name will be Andrews & Belden.

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Peirce Lewis recently appointed advertising and sales promotion manager of the Truscon Steel Co., in charge of that department in the home office in Youngstown, was formerly connected with Kawnee Mfg. Co, and the Detroit Steel Products Co.

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George O. Desautels retired recently from the Imperial Drop Forge Co., Indianapolis. He was vice president and general manager and organized the company eight years ago. Mr. Desautels has formed the George O. Desautels Co., with offices in the Postal Union building, for the sale of steel and forge equipment.

Harvey Schweitzer, who has been secretary of the Imperial company, will become its general manager, it is reported.

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Capt. Fred A. Bailey has resigned as marine superintendent of the Pittsburgh Steamship Co., Cleveland, which operates the largest fleet on the Great Lakes. His resignation becomes effective April 1. Capt. Bailey has been with the company since its organization. His plans for the future have not been announced.

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Drew M. Thorpe, for the past year district sales manager at Pittsburgh for United States Refractories Corp., Mt. Union, Pa., has resigned to become Buffalo district sales manager for the General Refractories Co., Philadelphia, succeeding George A. Forbes. Mr. Thorpe had been identified for approximately five years with E. J. Lavino & Co., Philadelphia.

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W. A. Topping, general sales manager for Republic Iron & Steel Co., Youngstown, is making an extensive business trip on the Pacific coast.

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Albert R. Goldrick and Albert R. Teare, mechanical engineers, now are members of Bates, Mackling, Goldrick & Teare, Cleveland, patent lawyers.

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Earl S. Machin, assistant manager at the New Castle works of the American Sheet & Tin Plate Co. has been appointed acting manager of the Laughlin works of the same company at Martins Ferry, O.

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H. B. Osgood has resigned as general manager of the Giant Grip Mfg. Co., Oshkosh, Wis., manufacturer of horseshoes, calks, anti-skid chain equipment for motor trucks, busses, etc. His resignation will take effect March 1. The Giant Grip company is successor to the Challoner Co. Mr. Osgood was made manager a little over four years ago.

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Robert W. White, assistant general sales manager, the Linde Air Products Co., New York, manufacturer of oxygen for welding and cutting of metals, has been appointed general sales manager of the Carbide & Carbon Chemicals Corp. L. M. Zimmer, western sales manager of the former company, has been appointed assistant general sales manager to succeed Mr. White. These changes were announced effective as of Jan. 1. Both Mr. White and Mr. Zimmer will continue to make their headquarters at 30 East Forty-second street, New York.

Other changes made at the beginning of the year in the executive personnel of the Linde sales organization include the appointment of E. E. Radcliffe, assistant sales manager, eastern division; Herman Ullmer, assistant sales manager, western division, and F. E. Stoppenbach, district sales manager, New York district.

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A. E. Lindau has resigned as vice president and J. T. Hanley has resigned as western manager of the Corrugated Bar Co., Inc., Chicago, to become president and vice president respectively, of the American Wire Fence Co., Otis building, Chicago. Mr. Lindau has been with the Corrugated company for 19 years and Mr. Hanley 13 years. They have been elected directors of the American company and will direct the active management of the company's business. Arthur A. Clement, for some years president of the company, has resigned to devote his time to other interests, but still retains membership on the board of directors and will be secretary and treasurer of the company.

Mr. Lindau was graduated from the engineering college of the University of Michigan in 1900. A short time spent with the Whiting Foundry Equipment Co., Harvey, Ill., was followed by experience in bridge detailing and design with the Wisconsin Bridge Co. and other companies. In 1906 he succeeded A. L. Johnson as chief engineer of Corrugated Bar Co. and upon the latter's departure for an extended stay in Europe assumed the responsibility for the development of the engineering department, as well as new products and methods of construction. At the time the company moved its general offices to Buffalo Mr. Lindau was made western manager, which position he held until 1916 when he was called to Buffalo to become general manager of sales. In 1918 he was made a member of the board of directors, and in 1921 elected a vice president.

Mr. Hanley was graduated from the engineering college of the University of Illinois in 1910. He was employed for a time in the bridge department of the Illinois Central railroad and by the Leonard Construction Co., and joined the sales department of the Corrugated Bar Co. in 1911. In 1916 he succeeded Mr. Lindau as western manager of the company, in which capacity he served until his recent resignation.

## Canadian Car Prospers

Review of conditions for the Canadian Car & Foundry Co. at its annual meeting showed a successful year and good prospects. The statement for the fiscal year ended Sept. 30, 1923, showed gross sales of $20,680,000, compared with $9,489,000 for the preceding year. During the fiscal year the company wrote off for depreciation, bond and scrip interest and reserve, $1,132,144 and received as interest from investments and by discounts, $129,529. Output for the year was 1700 freight cars, compared with eight the preceding year. Car specialty sales were $2,113,000 and of track work, frogs and switches, about $1,000,000. Sales of subsidiary companies were $6,200,000.

# Obituaries

DANIEL M. BUCK, aged 46, metallurgical engineer of American Sheet & Tin Plate Co. for the last 10 years, and connected with the company for 17 years at New Castle, Demler and Pittsburgh, died Jan. 23 at Vandergrift, Pa. He was born in Greenville, Pa. Mr. Buck was a leader in many technical research investigations in the iron and steel industry. Among his investigations were researches in corrosion and development of copper in steel as a rust resistant influence.

He was a member of the American Society for Testing Materials, the American Ceramic society, American Electrochemical society, American Engineering Standards committee, American Iron and Steel institute, Association of American Steel Manufacturers, Institute of Mining and Metallurgical Engineers, and the National Research council. Mr. Buck was also a member of the Duquesne club and University club of Pittsburgh; Cosmos club, Washington; Chemists club, New York and the Pennsylvania club, New Castle, Pa.

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George H. Lane, manager of the York Mfg. Co., York, Pa., died there Jan. 22.

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Patrick G. Campbell, one of the founders of Murcott & Campbell, Brooklyn, N. Y., file manufacturer, died Jan. 18 at his home in that city.

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Alton Emerson Stevens associated with George Briggs, president of the Screw Machine Products Co., Providence, R. I., and inventor of the automatic telephone, died recently at his home in Providence. He was born in Addison, Me., in 1876.

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Edward Sawyer, president of Atlantic Insulated Wire & Cable Co., Stamford, Conn., died Jan. 21 at Jekyl Island, Ga. Mr. Sawyer was 49 years old. He was graduated from Yale in 1898. After a short period with the American Trading Co., New York, he organized the Atlantic Insulated company of which he had been president since its organization.

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Edgar G. Murray, purchasing agent for the Youngstown Sheet & Tube Co., Youngstown, died Jan. 20 at Clifton Springs, N. Y., where he had gone to recuperate from a nervous breakdown. Mr. Murray was born in Youngstown, Oct. 23, 1872. He entered the employ of Carnegie Steel Co. shortly after graduating from high school, but left that company to enter the employ of the Youngstown Sheet & Tube Co.

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Glenn W. Norris, salesman in the Pittsburgh office of W. C. Runyon & Co., New York, sales agent for Struthers Furnace Co., Youngstown, O., died Jan. 20 in Pittsburgh after

DANIEL M. BUCK

a brief illness. He was born in Youngstown 33 years ago, and before becoming identified with W. C. Runyon & Co., had been with the Youngstown Sheet & Tube Co. in its Youngstown and Pittsburgh offices, the Liberty Steel Products Co., and the Iron Trade Products Co., Pittsburgh.

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Joseph D. Adams, president of J. D. Adams & Co., Indianapolis, Ind., manufacturer of road building machinery, died Jan. 18 at his home in that city. Mr. Adams was the inventor of the leaning wheel grader, the principal product of his company. He was born Dec. 12, 1853, in Parke county, Ind. His early years were spent on a farm in that county. As a young man he taught school. He was in charge of roads for his township, and became interested in road improvement machinery to such an extent that he devised an improved type of road scraper. He had the machine manufactured in the East and it was sold in Indiana and Illinois. Later he obtained an agency for road machinery. For a time he sold road machinery and constructed bridges and 29 years ago founded J. D. Adams & Co.

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Sidney Rosenfeld, vice president of the Grabler Mfg. Co., Cleveland, died Jan. 28 at the age of 50 years. He entered the foundry business 25 years ago, being one of the organizers of the Grabler company, manufacturer of malleable iron castings.

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George L. Meade, aged 60, of Mt. Lebanon, Pittsburgh district manager of the Pawling & Harnischfeger Co., Milwuakee, electric crane builder, died Jan. 24 from heart disease. Mr. Meade was born in Holcomb, N. Y., where he was educated. Before coming to Pittsburgh 18 years ago, he was manager of the branch of Pawling & Harnischfeger Co. at Columbus, O. Mr. Meade was a member of the St. Clair Country club and was president of the board of school directors of Mt. Lebanon for several years. He was also a member of the Almas club of Pittsburgh.

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Samuel Rankin, treasurer of Hubbard & Co., Pittsburgh, died Jan. 19 in his home in that city. He was born in Greensburg, Ind., Nov. 23, 1842. Besides his connection with Hubbard & Co., with whom he had been associated for 54 years, Mr. Rankin was vice president of the National Bolt & Nut Co. and treasurer of the Hubbard Pressed Steel Co., Niles, O.; and was interested in Beall Bros., Alton, Ill.; Beall Supply Co., Alton, Ill.; Beall Tool Co., East Alton, Ill.; Jackson Shovel Co., Montpelier, Ind.; Russell Shovel Co., Pittsburgh, and the Fulton Tool Co., Huntington, W. Va.

## Employment Increased

Employment in the state of New Jersey increased 5 per cent during December as compared with November, according to a survey by the federal reserve bank of Philadelphia. Shipbuilding, cigar making, printing, rubber tire and iron and steel plants reported the largest increase. Heating appliance, clothing, textile, explosive and leather plants reported decreases.

## Foundrymen Hear Talk on Trend of Business

"Signs of the Times" was the subject of an address delivered by A. O. Backert, vice president and general manager of the Penton Publishing Co., Cleveland, publishers of IRON TRADE REVIEW, before the Quad City Foundrymen's association at the LeClaire hotel, Moline, Ill., Jan. 21. Mr. Backert stated that judged solely by the financial condition of the country, 1924 should be a booming year, notwithstanding the tradition that presidential election slows up business. The speaker added, however, that history does not bear out this contention, many presidential election years in the past quarter of a century having been attended with satisfactory business.

Mr. Backert said 1923 was a record breaker in the iron and steel industry. Pig iron production, which exceeded 40,000,000 tons, established a new high mark and steel production with a total of 44,000,000 tons was second only to that of 1917. While a steady decline in iron and steel production was recorded in the latter half of 1923, the closing month witnessed the lighting of several additional blast furnaces. An increase in both pig iron and steel output has set in since the first of the year. It was stated that the improved business conditions were reflected by the increase in unfilled tonnage of the United States Steel Corp. for the month of December, which totaled 76,000 tons. This was the first month in almost a year, he added, that did not show a loss in unfilled tonnage for the corporation.

In forecasting the outlook for this year, Mr. Backert stated that production probably will be slightly below last year's totals. According to the speaker, keen competition will prevail and it is doubtful if prices will advance materially. He stated that notwithstanding the continued heavy tax burden, high wages and high freight rates, economies must be effected in manufacture to maintain prices at their present level.

## Boston Chosen for Steel Treaters' Convention

Boston has been selected as the place for the sixth annual convention and exposition of the American Society for Steel Treating, according to an announcement just made by W. H. Eisenman, secretary of the society, the dates selected being Sept. 22-26. This decision was reached at a meeting of the board of directors in Washington, Nov. 2, but its announcement was withheld because some difficulty was experienced in securing in Boston a place with adequate facilities for holding the exposition.

Through the courtesy of Governor Channing H. Cox and William F. Williams, chairman of the division of highways and waterways, the society has been granted the use of the Commonwealth pier. The pier is ideally located and is provided with adequate facilities for the exposition. Exhibition space will be on one floor, which has an area 120 x 1200 feet. Floor plans have been drawn up and will receive general distribution soon.

The program committee under the chairmanship of L. D. Hawkridge, Hawkridge Bros. Co., Boston, held a meeting in New York in December at which time it laid its plans for the securing of papers for the convention. Selection of the September convention date was influenced by the fact that the New England territory is ideal for touring during that month and many may wish to attend the convention during the vacation period.

## Plan Safety Conference

The midyear safety conference of the National Safety council's engineering section, the Chicago Safety council and the Western Society of Engineers will be held at the Morrison hotel, Chicago, Feb. 19 and will include morning and afternoon sessions and a dinner meeting. The woodworking section of the council will co-operate in the morning program on woodworking hazards which will be featured by an exhibit of home made and commercial guards. In the afternoon, several phases of the always important subject of industrial health and medical work will be discussed with Dr. F. G. Barr of the National Cash Register Co. and Dr. S. M. Francis of Buffalo as the principal speakers. A dinner will be held in the evening.

## Convention Calendar

**Jan. 31-Feb. 1—American Society for Steel Treating.** Winter sectional meeting, Rochester, N. Y. W. H. Eisenman, 4600 Prospect avenue, Cleveland, is secretary.

**Fig. 4-8—American Institute of Electrical Engineers.** Midwinter convention at the Bellevue-Stratford hotel, Philadelphia. F. L. Hutchison, 29 West Thirty-ninth street, New York, is secretary.

**Feb. 4-9—American Ceramic society.** Annual meeting, Atlantic City, N. J. R. C. Purdy, Ohio State University, Columbus, O., is secretary.

**Feb. 18-21—American Institute of Mining and Metallurgical Engineers.** Meeting in New York. F. F. Sharpless, 29 West Thirty-ninth street, New York, is secretary.

**April 24-26—American Electrochemical Society.** Spring meeting at Philadelphia, Dr. Collin G. Fink, Columbia university, New York, is secretary.

## Foundry Problems Feature Convention Program

The seventh annual convention of the Southern Metal Trades association will be held in New Orleans, La., Feb. 26-27, the headquarters of the convention being at the St. Charles hotel. The program in part is as follows:

**TUESDAY, FEB. 26.**

**Afternoon Session**

Address, President J. R. Hedges, Chattanooga, Tenn.; Appointment of committees; "Tinkering with the Transportation Act" by E. S. Jouett, vice president, Louisville & Nashville Railroad Co., Louisville, Ky.; "Miscellaneous Details in Connection with Gray Iron Foundry Practice" by Enrique Touceda, consulting engineer, Albany, N. Y.

**Evening Session**

Banquet, W. G. Mealor, Ex-President of Southern Metal Trades association, toastmaster; "The Port of New Orleans" by N. M. Leach, president, Pacific-Caribbean Gulf Line Inc., New Orleans.

**WEDNESDAY, FEB. 27.**

**Morning Sesion**

Reports of officers: report of treasurer; "Foundry Costs" by Thomas Perkins, Macon, Ga.; "Problems of Management in a jobbing and Manufacturing Plant" by W. C. Trout, Lufkin, Tex.; "A Comparison of American and European Foundry Practice" by H. M. Lane, consulting engineer, Detroit; Reports of committees; Election of officers.

Wednesday afternoon will be devoted to trips around the city, visiting French quarter and other points of interest.

## Shorter Day Boosts Costs

Washington, Jan. 29.—Judge E. H. Garv, chairman of the United States Steel Corp. has informed President Coolidge that the shorter workday established in the iron and steel industry to eliminate the 12-hour day has increased the cost of production 10 per cent but that efficiency may reduce this. The White House opinion says that the demand for higher wages generally means a safrifice by consumers in a consequent higher cost of living.

## Elects New President

Youngstown, Jan. 29.—W. Aubrey Thomas was elected president of the Mahoning Valley Steel Co., Youngstown, O., at a stockholders' meeting held recently. He takes the place of Jacob D. Waddell, who resigned last fall. Other officers are: John P. Hosack, vice president and treasurer; John M. Thomas, secretary and M. A. Jones, assistant secretary. Directors are the officers named and J. D. Waddell, M. T. Waddell and M. P. Clingan.

## Dispute Royalty Tax

A temporary injunction has been granted against the state of Minnesota against the collection of taxes on royalties, in federal court at Duluth, pending a hearing April 7. Taxes estimated at $1,000,000 are involved.

# Here and There in Industry

**Live Information Which Records the Expansion of Various Lines of Productive Enterprise**

CROUSE & POPE FOUNDRY CORP., Auburn, N. Y., recently incorporated for $100,000, has purchased No. 1 foundry formerly owned by the International Harvester Co. there. The Crouse company now is equipped to do business in light and medium castings with a capacity of from 50 to 75 tons a day. The plant is partially equipped at present. Officers of the company are: William Crouse, president; William J. Emery, vice president; H. L. Hope, treasurer and E. G. Washburn, secretary. E. D. Clapp, George Pearsin, H. G. Metcalf and John Taber, all of Auburn, are additional directors.

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JOHN W. GAMBLE recently was elected president of the American Machinery & Supply Co., 1113 Howard street, Omaha, Neb. Thomas McShane was elected vice president, Benjamin Harrison, treasurer and Martin H. Harris, secretary.

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BURT CORE SAND CO., Detroit, producer of bank core sand, has re-elected the following officers for 1924: Warner R. Thompson, president; R. J. Mehlman, vice president; F. J. Snyder, treasurer, and J. E. Love, secretary.

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MANUFACTURE of metal and wood cutting saws will be undertaken by Clemson Saw Co., Middletown, N. Y., recently incorporated with $1,000,000 capital. A plant is being constructed in which machinery is being installed. George N. Clemson is president, Richard D. Clemson and W. R. Batcheller, vice presidents, and W. E. Cross, secretary and treasurer.

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M'KINNON STEEL CO., Sherbrooke, Que., has purchased a site at Hamilton and St. Patrick streets, Montreal, where it plans constructing a modern plant for the fabrication of structural steel. It is planned to install the most up-to-date fabrication equipment available to take care of the increasing demands for the company's products. George MacKinnon is president.

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GREATER prospects for business in 1924 than were realized in 1923 were reported at the annual meeting of The Mill & Mine Supply Co., Akron, O., Jan. 22. The company deals in hardware, machinery and supplies. W. W. Sharp was elected president; M. A. Knight, vice president; Fred Good, secretary; Chris Franz, treasurer; and W. O'Neil, W. Boesche, Alexander Adamson, G. A. Rohner and A. G. Teeple, directors.

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ADDITIONAL plant capacity is being constructed by the Florida Machine Works, Jacksonville, Fla. A 1-story machine shop is under construction, in which an electric traveling crane and other machinery and equipment will be installed. A warehouse and foundry were completed recently. About 430 tons of structural steel was used in the recent building program. W. T. Londeree is superintendent of construction.

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CONSTRUCTION of additional plant facilities is under way for the Stanley Works, New Britain, Conn. A 6-story, 60 x 140-foot plant with 50,000 square feet of floor area will be used for regular tool manufacturing and for an addition to the packing room. Another addition, 60 x 200 foot, 3-story, with 36,000 square feet of area, will be used for the woodworking plant. Both buildings are of reinforced concrete construction.

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METALLURGICAL SERVICE CO., 405 Mercantile Library building, Cincinnati, was organized recently by N. M. Salkover, formerly metallurgist at R. K. LeBlond Machine Tool Co., that city. The new company will handle a complete line of metallurgical equipment and supplies as well as do general consulting engineering work. Its sales organization consists of experienced graduate metallurgical engineers.

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THE General Contracting Corp., Pittsburgh, recently received a contract from Carnegie Steel Co. to drive fender piling in the Ohio river for its plant at Mingo Junction, O. The company will ask bids for construction of a steel hull derrick boat, one steel hull dredge, two steel hull scows and a 200 horsepower oil burning towboat. The dredgeboat EASTERN now is at Cole's docks, Monongahela river, where it is being rebuilt The company in the near future will place the dredge PELICAN on the Elizabeth marine ways for a general overhauling.

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PACKAGE Machinery Co., Springfield, Mass., manufacturer and dealer in machinery, declared a dividend of $4 on its common stock at a recent annual meeting. This company reports a good year for 1923 and excellent prospects for 1924. The following directors were elected: Stoughton Bell, Boston; Thomas L. Jefferson Jr., Springfield; Frank G. Johnson, Chicago; George W. Kyburg, Springfield; Paul Longhammer, Springfield; Frank H. Page, Springfield; William L. Putnam, Boston; Frank B. Redington, Chicago, and E. Lovell Smith, Springfield.

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MERGER of Crosley Mfg. Co. and Precision Equipment Co., manufacturers of radio sets and radio parts has been announced by Powel Crosley Jr., president of both companies. The combined companies hereafter will be known as the Crosley Radio Corp. It is planned to be the largest radio manufacturing organization in the world, so far as actual production of receiving sets is concerned. The Crosley Mfg. Co., was organized in 1920 and a year ago Mr. Crosley and his associates acquired the capital stock of the Precision Equipment Co. The production of the combined companies will run about 5000 receiving sets daily.

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DIRECTORS of Westinghouse Electric & Mfg. Co. have approved plans for further enlarging its works at Sharon, Pa. According to announcement from Pittsburgh, a foundry is to be built in connection with the transformer plant to make parts for the larger jigger transformers. At the Pittsburgh offices it was said that the foundry was to be modernly equipped, and that the appropriation had been made. The Sharon works is turning out about 100 transformers a week for export to Japan. It is said the company eventually will make all its transformers at the Sharon plant.

# January Sales Show Improvement

## Volume of Orders Closed During Month Greater than in December—Large Lists Now Pending May Be Closed Soon—Locomotive Crane Business Better as Contractors Plan for Season

SALES of machine tools for January showed an increase over the last month of the year, although the gain was not heavy. A healthier condition exists in this market at the present time, due chiefly to inquiries that are coming out in good volume, and dealers feel that February will develop further increases. A number of large inquiries pending for some time should reach a closing stage soon. Among these are included the list from the Westinghouse Electric & Mfg. Co., the Sanitary Mfg. Co., the A. O. Smith Co., Milwaukee, the New York Central and a manufacturer in the Boston district.

Automotive manufacturers continue to buy from time to time, although these tools are not being used to further any expansion programs. Exception to this is found in the case of the Ford Motor Co. where heavy orders are being placed. A few manufacturers of closely allied products also are buying.

Among the industrial buyers of the week are included the Edward G. Budd Co., Philadelphia; the Link-Belt Co.; the Spicer Mfg. Co., Plainfield, N. J.; the New York Central; the Pennsylvania; the Union Pacific; and the National Carbon Co., Cleveland. The Northern Pacific is expected to be in the market soon for tools for enlargements to shops at Brainerd, Minn., and the Erie probably will buy equipment in the New York district for the Hammond, Ind. shops.

Sales of used machinery are increasing and inquiries continue to keep up at a good pace. Improved demand is seen for cranes, especially of the locomotive type. Contractors now are figuring their needs and are expected to be in the market soon.

# Inquiries Continue Heavy, Export Demand Better

NEW YORK, Jan. 29.—Machine tool buying slowly is recovering from the dullness which characterized the market at the beginning of the year. However, orders as a general rule are confined to single machines. While some substantial business is under contemplation, inquiry is quiet. One feature is an improved demand from Finland and Norway. These countries have recently sent out scattered inquiries for railroad equipment which may develop into fair-sized business within the next few weeks. This has been the first real interest to be shown by these countries in several months. Business with Japan is developing slowly. Such orders as are coming through are for the most part from dealers and are for equipment needed primarily in building construction. One company, with offices in this city, recently has booked 10 friction saws for Japan.

The Spicer Mfg. Co., Plainfield, N. J., has concluded purchases on several special machines, including two milling machines, a few lathes and a few small high-speed drilling machines. Purchases aggregated around $20,000 to $25,000. The New York Central railroad recently has closed on a shaper and a radial drill, however, no action has been taken on the bulk of the list this railroad has pending. The Pennsylvania railroad has closed on a 7-foot radial drill through its Philadelphia offices. It is understood now that the Interborough Rapid Transit Co. will take no action on its contemplated list of tools for some time. Improved demand for locomotive cranes and handpower cranes feature the eastern conveying market. One seller, with headquarters in this city reports that within the past week he has received 15 inquiries for handpower equipment. Improved inquiry for locomotive cranes appears to be solely from private concerns, no new railroad lists being reported. Inquiry for electric overhead cranes still is restricted, although orders are a little more numerous.

### Large Lists Still Up

PITTSBURGH, Jan. 29.—Several single machine tool orders are noted by each of a number of sellers in this vicinity, action on the larger lists still being deferred. Machines for the Peabody high school practically have been cloesd and a manufacturer in the Wheeling district has been placing a few orders. A local user bought a 24-inch shaper and a large boring mill. A number of similar sales in both new and used machinery were made last week to manufacturers in nearby districts. Except for small items no real orders have been placed by the Westinghouse Electric & Mfg. Co. on its large list, and the Standard Sanitary Mfg. Co. orders for machines are scheduled to be closed soon.

Purchases by the Jones & Laughlin Steel Corp. of five cranes, including one each 7½, 10 and 15-ton for its new warehouse, and two 20-ton billet yard cranes for its Southside plant, feature the past week's crane market. A few new inquiries are out, the largest being for two 5-ton, two 15-ton, a 30-ton and a 75-ton crane for a structural interest. The Blair Strip Steel Co., New Castle, Pa., has closed on three cold rolled strip mills, tandem type with the United Engineering & Foundry Co. for its new strip mill.

### Sales Slack; Inquiries Heavy

CLEVELAND, Jan. 29.—Sales of machine tools in this district during the past week have registered a decline over the total realized for the first part of the month. However, dealers and manufacturers feel that this is only a temporary condition, and since inquiries continue to come out in a good volume, look for heavier buying to follow soon.

Automobile builders in this and the Detroit district continue to buy machines. With the exception of the Ford Motor Co., which is buying machines to complete a previously announced expansion program, the tools are for replacement purposes and for the establishment of departments to handle work previously let out on contracts to outside manufacturers. During the week sales of machines are reported to the Olds Motor Works, Lansing, Mich.; Reo Motor Car Co., Lansing, Mich.; Buick Motor Co., Flint, Mich.; Studebaker Corp., South Bend, Ind.; Chevrolet Motor Co., Flint, Mich.; Maxwell Motor Co., Detroit, and the Fisher Body Co.

It is reported that the National Carbon Co. closed last week on the recent inquiry. The same company also purchased one special machine from a Cleveland dealer. The Youngstown Pressed Steel Co., Youngstown, O. has

placed an order for a number of machines, several going to Cleveland dealers. This list has been standing for some time. The Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. has purchased two turret lathes from a local manufacturer, one going to the Canadian factory and one to the East Pittsburgh plant. This lathe manufacturer states that inquiry seems divided between the electrical and automobile manufacturers.

In the second hand market a slight increase is noted. One dealer reports the sale of a miller to a Cleveland user, lathes to manufacturers in northern Ohio, eastern New York and Detroit.

Business in the crane market is fair. Contractors and road builders are figuring on equipment that will be needed for operations next summer and manufacturers of locomotive cranes look for a good volume of this business in the near future.

### Sales Show Increase

CINCINNATI, O., Jan. 29.—Volume of sales in the machine tool and shop equipment market for the month of January shows a marked increase over the record for December. While the greater part of the business has been confined to sales of one or two tools, the total amount realized has been entirely satisfactory. Some manufacturers are of the opinion there will be an advance in the price of machine tools within the next 30 days. This, they assert, will be brought about by the increased price of pig iron, higher labor and production costs.

Buying has been of a general nature and is not traceable to any individual trades. The automobile manufacturers probably come first in the number of tools taken the past week. The railroads are not exceptionally active in this district. The Edward G. Budd Co., Philadelphia, placed an order with a local manufacturer for two 36-inch and two 48-inch planers, while the Ford Motor Co. ordered a 48-inch machine for delivery at Detroit. The Link-Belt Co. is having made in this city a special 84-inch planer. Other sales include boring mills, lathes, drilling machines and oil burning equipment. Inquiries continue to maintain satisfactory rate.

### Business Is Quiet

CHICAGO, Jan. 29.—Most machinery houses have found business slow the past week. Inquiry has been good and apparently it is for the purpose of buying and not merely curious inquiry. However, actual placements of machine tools have been comparatively few. One machinery house has closed on seven small tools. To the long list of planer inquiries have been added three more, all good sized planers, from Chicago and Milwaukee district interests. A local manufacturer has placed a boring mill. The A. O. Smith Co., Milwaukee, again is reported about to close on its long list. The board of education has just closed bids on tools for the Hoyne Continuation school. The Northern Pacific railroad is expected to be in the market for tools for its shops at Brainerd, Minn., which it is to enlarge. The Erie railroad will probably buy in New York such tools as it will require for its new shop at Hammond, Ind.

### January Sales Top December's

BOSTON, Jan. 29.—Sales of machine tools this month, while not heavy, nevertheless, show an improvement over the sales of December. Leading dealers report total sales for the first three weeks in January greater than for the entire month of December. Inquiry still is limited to individual tools or at most to groups of three or four with the exception of the East Boston manufacturers' list of 25 to 30 tools which still is before the trade.

Sales of new tools in Boston during the last week ran between $15,000 and $20,000, the principal items being a multiple spindle drill and a heavy milling machine. The buyers include two electrical manufacturers, a radio goods manufacturer, a general machine shop and a textile machine manufacturer. Used tool sales for the past week were slightly better than for the week previous. Prices are unchanged. Inquiry for four or five cranes is out but no sales of importance are reported.

# Crane Awards and Inquiries of the Week

## Orders Placed

One 7½-ton, 74-foot 10-inch span, and one 10 and 15-ton with 87-foot 9-inch span for the new Tyenty-seventh street warehouse of the Jones & Laughlin Steel Corp., Pittsburgh, all 5-motor double trolley type, awarded the Alliance Machine Co., Alliance, O.

Two 20-ton billet yard cranes for the Southside plant of the Jones & Laughlin Steel Corp., Pittsburgh, to the Morgan Engineering Co., Alliance, O.

One 20-ton locomotive crane for the Barbara Asphalt Co., Philadelphia, to the Browning Co., Cleveland.

One 15-ton locomotive crane for the Philadelphia Paper Co., Philadelphia, to the Browning Co., Cleveland.

One used 7½-ton gasoline crane for the Hudson & Manhattan railways, New York, to the Hoisting Machinery Co., New York.

One 10-ton and one 5-ton electric overhead crane, both with 60-foot spans, for the Easton Structural Steel Co., New York, to the Whiting Corp., Harvey, Ill.

One 3-yard electric bucket handling crane, 54-foot span, placed by the International Portland Cement Co., through its New York offices in the Canadian Pacific building, for shipment to Bonner Springs, Kans., with the Milwaukee Electric Crane & Mfg. Co., Milwaukee.

One 100-ton electric crane, 64-foot span, for a power plant at Fall River, Mass., awarded through Stone & Webster, Boston, to an eastern builder.

One 60-ton, 4-motor crane, 62-foot span, placed with the Phoenix Utility Co., 71 Broadway, New York, with the Whiting Corp., Harvey, Ill.; the crane is for shipment to Salt Lake City.

One 10-ton crawler crane for the Lock Joint Pipe Co., Ampere, N. J., to the American Hoist & Derrick Co., St. Paul.

One 25-ton locomotive crane for T. I. Butler, San Francisco, awarded the American Hoist & Derrick Co., St. Paul.

One 23-ton locomotive crane for a builders' supply company, Harrison, N. J., to McMyler-Interstate Co., Bedford, O.

One 10-ton handpower crane, 25-foot span, for the West Lynn plant of the General Electric Co., N. Y.; to the New Jersey Foundry & Machine Co., New York.

One 3-ton handpower crane, 37-foot span, for C. Feigenstan, Newark, N. J., to the New Jersey Foundry & Machine Co., New York.

One 3-ton, 300-foot monorail system, for a northern New Jersey concern to the New Jersey Foundry & Machine Co., New York.

One 1-ton electric hoist and monorail track for the G. G. Salmon Co., South Orange, N. J., to the New Jersey Foundry & Machine Co., New York.

One 5-ton three motor electric traveling crane for the Railway & Industrial Engineering Co., Pittsburgh, to the Northern Engineering Works, Detroit.

One three motor 26-foot span electric traveling crane and two one motor electric traveling cranes for the Michigan Stove Co., Detroit, to the Northern Engineering Works, Detroit.

Two 10-ton three motor electric traveling cranes for the Chicago Surface Lines, Chicago, to the Northern Engineering Works, Detroit.

One 5-ton 60-foot span three motor electric traveling crane for the Wickham Piano Co., Springfield, O., to the Northern Engineering Works, Detroit.

One 30-ton barge crane for the United States engineer's office, Milwaukee, to McMyler-Interstate, Bedford, O.

One 25-ton crane for the Winnipeg Electric railway, Winnipeg, Can., to McMyler-Interstate, Bedford, O.

One 10-ton, 4-wheel railroad crane and one 10-ton tractor type crane for a builders supply company, St. Louis, to McMyler-Interstate, Bedroid, O.

## Orders Pending

One 25-ton locomotive crane for the Bessemer & Lake Erie railroad, Pittsburgh; bids being received.

One 20-ton locomotive crane for the Carnegie Steel Co., Homestead, Pa., works; bids being received.

One locomotive crane for the Carnegie Steel Co., Clairton, Pa.; action still deferred.

Crane for Carnegie Steel Co., Mingo Junction, O.; action still deferred.

Six cranes including two each 5-ton and 15-ton, and one each 30-ton and 75-ton, for a structural steel interest in the Pittsburgh district; bids received last Saturday.

One 100-ton electric crane for a power plant in Los Angeles; Stone & Webster, Boston, receiving bids.

Two 100-ton cranes for the Pittsfield plant of the General Electric Co., Schenectady, N. Y., specifications being revised.

Seven cranes for the Kearny, N. J., plant of the Western Electric Co., 100 William street, New York, minor revisions being made in specifications.

Two 150-ton, 4-motor cranes, each equipped with 10-ton auxiliary hoist and having spans of 63 feet, for the engineering division of the war department, Florence, Ala., bids asked.

# Recent Industrial Business Changes

STANDARD GAUGE STEEL CO., Beaver Falls, Pa., has discontinued its district office at 611 Harrison building, Philadelphia, Pa. The Edgcomb Steel Co., recently incorporated, has been appointed as exclusive sales agents in the Philadelphia territory for the Standard company. Offices and warehouse are located at Eleventh and Cambria streets, Philadelphia. Leslie Edgcomb is president of the new company.

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The John C. Smith Hoe & Tool Co., Evansville, Ind., has changed its name to the Young Car Co.

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J. F. Corlett & Co., Cleveland, will move its office as of Feb. 1 from Kirby building to 1679 Union Trust building.

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The American Plier & Tool Corp. Milwaukee, has changed its name to Master Plier Corp. Walter S. Bronk is secretary.

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Rogers, Brown & Co. will move its Cleveland office on Feb. 1 from Kirby building to suite 1816 Union Trust building.

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Feenaughty Machinery Co., Seattle, dealer in road building machinery, has moved to larger quarters at 1028 Sixth avenue south.

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Moltrup Steel Products Co., Beaver Falls, Pa., has opened an office at 789 Drexel building, Philadelphia.

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Fasey & Hannas Co., dealer in foundry and pattern makers supplies, has occupied its recently completed building at 5315 North Second street, Philadelphia.

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Greene Steel Castings Co., Berkeley, Cal., has taken over the plant of the Greene-Schaw Co., 1302 Second street, and is now manufacturing steel castings.

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Kidwell Boiler Co., manufacturer of steam boilers, has moved its office to Room 813, 288 East Water street, Milwaukee. R. W. Campbell is secretary and treasurer.

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M. Barde Sons Steel & Machinery Co. removed its offices and warehouse to Parr Terminal, Oakland Mole, Oakland, Cal., on Jan. 1. F. C. Borrman is manager of the offices in that district.

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American Cast Iron Pipe Co. has moved its Los Angeles offices from the Metropolitan theater building to 417 Marsh-Strong building. J. J. Swenson is Pacific coast representative.

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Nutley Foundry Co., manufacturer of brass, bronze and aluminum castings, has moved from 16 Stager place, Nutley, N. J., to Princeton street and Passaic avenue, Passaic, N. J.

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The foundry of the Parsons Machinery Co., Marlboro, Mass., manufacturer of shoe machinery, will be operated in the future as an independent jobbing foundry under the name of the Marlboro Foundry Co.

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The American Manganese Steel Co. will be represented in Utah and eastern Nevada by Landes & Co., Salt Lake City, in New Mexico and Arizona by Herbert B. Wolcott Jr., El Paso, Tex., and in Colorado by the A. T. Herr Supply Co., Denver.

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The Mansfield Sheet & Tin Plate Co. and the Ashtabula Steel Sheet Co. announce the opening of their own district sales office in the Wrigley building, Chicago, as of Jan. 1. F. F. Huber is district sales manager there.

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Incorporation of the Murdock-Lowe Equipment Co., Inc., Chicago, was effected recently to succeed the Murdock Equipment Co., dealer in contractors and industrial equipment with offices at 455 Old Colony building. Mr. Lowe, formerly of the Boehck-Lowe Machinery Co., Milwaukee, has allied himself with Mr. Murdock, forming the new company, which company represents various manufacturers of road and building construction materials.

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Hanna Engineering Works, 1765 Elston avenue, Chicago, manufacturer and distributor of riveting machines, air hoists, etc., now is represented in Richmond, Va., and surrounding territory by Walter F. Delaney, 203 Mutual building, Richmond.

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Reorganization of the Appleton Wire Works Co., Appleton, Wis., has been made by incorporation in Wisconsin of the Appleton Wire Works, Inc., having a capital of $1,050,000, compared with $150,000 in the old company. Ownership is unchanged and the former management is retained.

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Federal Steel Sash Co., formerly the Federal Bridge & Structural Co., Waukesha, Wis., has placed the sale of its steel sash, metal store fronts, etc., in the hands of the North Western Expanded Metal Co., Chicago. The North Western company will handle the sales throughout the country.

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Conveyors Corp. of America, 326 West Madison street, Chicago, manufacturer of coal and ash handling equipment, has placed its Cincinnati representation with Lathrop & Trotter, recently incorporated, with offices at 733 Union Trust building, Cincinnati. The new company will handle steam jet ash conveyors, air tight doors, cast iron storage tanks and other power plant equipment in the Cincinnati territory.

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The Taylor-Hall Welding Corp. 3 May street, Worcester, Mass., has arranged to handle the butt and spot welders manufactured by Thomson Electric Welding Co., Lynn, Mass., and the arc welding machinery of Electric Welding Co., Boston.

# Construction and Enterprise

## Concise and Timely Business Building Opportunities from the Field of Industry

BIRMINGHAM, ALA.—Standard Sanitary Mfg. Co. plans $105,000 warehouse at South Second street and Avenue C. The plant will be four stories high.

FULLERTON, CAL.—Balboa Motor Corp. plans 80 x 100-foot office building, 168 x 280-foot main factory, 84 x 150-foot paint shop and 48 x 150-foot repair shop. Hanna & Grant, Ferguson building, Los Angeles, is architect.

RIVERSIDE, CAL.—Riverside Welding & Brazing Works, Fred Pittam, president, has purchased property at 620 Market street, upon which he plans 1-story brick building in which new equipment will be installed.

SAN FRANCISCO—Calcoal & Iron Co. has been incorporated for $3,500,000 by H. C. Haas, W. Warner Thayer, Charles S. Halsey, W. G. Harkins and J. M. Trusty, with Frank J. Golden, Hobart building, as attorney.

BRIDGEPORT, CONN.—Hergi Mfg. Co., maker of burrs and portable finishing outfits, has completed 40 x 50-foot addition to its plant.

NEW BRITAIN, CONN.—Hart & Cooley Co., Corbin avenue, manufacturer of hot air furnaces, has awarded construction contracts for 2-story, 60 x 75-foot factory costing about $40,000.

SAVANNAH, GA.—The Crane Co., 836 South Michigan avenue, Chicago, operator of various foundries, plans construction of additional warehouse facilities here. A warehouse is contemplated also for Jacksonville, Fla.

CHICAGO—The Hedman Mfg. Co., 28 East Huron street, is constructing $105,000 addition.

CHICAGO—The Niagara Radiator & Boiler Co., 1111 East Eighty-third street, has awarded contract for $60,000 addition to E. W. Sproul Co., 2001 West Pershing road.

CHICAGO—Erie railroad, 608 South Dearborn street, plans expenditure of about $500,000 on locomotive and car shops, power house and coal hopper at Hammond, Ind.

CHICAGO—Metal Tube Mfg. Co., 723 Fulton street, has been incorporated for $15,000 to manufacture and sell metallic, paper, composition tubing, dies, tools, etc., by Ernest C. Kuehl, Joseph H. Sperry and Charles F. Sperry.

CHICAGO—Walsh & Metzger, Inc., 6828 South Chicago avenue, has been incorporated for $75,000 to do general contracting business, manufacture and sell plumbing, heating and electrical apparatus, etc., by A. C. Metzger, J. L. Walsh and David Walsh.

CHICAGO—The Arco Corp., 6008, 6012 South State street, has been incorporated for $30,000 to manufacture and deal in air washing machines, devices and systems for ventilating and heating, by E. H. Jones, 6949 Oglesby avenue.

CHICAGO—Enterprise Boiler & Tank Works, 2306 Wabansia avenue, has been incorporated for $25,000 to manufacture and repair boilers, smoke stacks, buckets, iron work, etc., by E. J. Schimke, Mrs. Ida Strege, B. A. Strege and Anna M. Schimke. A plant is planned for construction in the near future.

FREEPORT, ILL.—The Stevens Motor Car Service Co., Chicago and Spring streets, recently incorporated for $50,000, will manufacture and supply service parts for Stevens automobiles and Moline tractors, according to B. F. Peek, president of the Moline Plow Co., interested in the new company.

PERU, ILL.—The American Nickeloid Co., 1501 Second street, has been incorporated for $20,000 to produce, manufacture and sell nickelized metal, by F. M. Maze, R. F. Struever and S. E. Pilson.

URBANA, ILL.—University of Illinois, James M. White, supervising architect, is opening bids on Feb. 4 on four buildings.

EVANSVILLE, IND.—Builders Iron Works Co. has been incorporated for $18,000 to deal in iron, steel and other metals, by Venner S., Elizabeth S. and Victor S. Penfield.

BOSTON—The General Oil Heating Co. has been incorporated for $100,000 by F. H. Andres, J. O. Conlin, Arlington, Mass, and W. J. Berkley, Winthrop, Mass.

BOSTON—Reachall Radio Associates, Inc., has been incorporated for $100,000 to manufacture radio equipment, by James G. Stewart, William B. Darling, Newton Centre, Mass., and Alfred Gardner, of Cambridge, Mass.

BOSTON—Peckham Brass Foundry, Inc., has been incorporated for $10,000 to make bronze and brass castings, with Gustavus H. Sparrow, 10 Willow street, Belmont, Mass., as president and treasurer.

LAWRENCE, MASS.—The Stanchfield Hardware Corp. has been incorporated for $30,000 by Homan J. Stanchfield, Methuen, Mass., and George F. Wood and Nellie Schwartz, Lawrence.

LYNN, MASS.—Whittredge Portable Garage Co. is building 1-story, 50 x 200-foot manufacturing building here.

NEW BEDFORD, MASS.—The Resilient Auto Wheel Corp. has been incorporated for $100,000 by Abel Sequeira, Jose Lucio de Teves Leite, and Abel Sequeira.

SPRINGFIELD, MASS.—The Domestic Appliances Mfg. Co. has been incorporated for $100,000 by Charles A. Thomas and M. Richard Hart, and Peter Healy of West Springfield.

TAUNTON, MASS.—Waldron Hardware Co. plans 2-story, 90 x 100-foot warehouse.

WHITMAN, MASS.—The Boston Electric Heating Corp., manufacturer of machinery and radio machines, has been incorporated with 1000 shares no par value, by Harold L. Spooner and Charles E. Lowell, Whitman, and Donald B. Heath, Winthrop, Mass.

WORCESTER, MASS.—Oxygen Process Corp. of New England has been incorporated for $250,000 to manufacture machinery and accessories, and a patented process for gas making, by Ebenezer A. W. Jeffries, Charles F. Morgan and George A. Gaskill.

DETROIT—Detroit Testing Laboratory is constructing 3-story building at 554 Bagley avenue to be ready for occupancy about April 1.

MONROE, MICH.—The Monroe Steel Castings Co. plans reconstructing unit damaged by fire recently. Expenditure reported as involving about $50,000.

GARFIELD, N. J.—Bids will be taken shortly on the erection of municipal motor repair works. Henry Garritson, 118 Passaic avenue, is architect.

HIGHLAND PARK, N. J.—John Waldron Corp., has been incorporated with $200,000 preferred stock and 100,000 shares no par value common, to build machinery, by Edward W. Hicks, New Brunswick, N. J.

PLAINFIELD, N. J.—Blue Ridge Mfg. Co. has been incorporated with $125,000 preferred and 2500 shares no par common stock, to man-

## Tool Exports Decline

*DOMESTIC exports of lathes and other metalworking machinery from the United States showed a decrease in November according to a report of the department of commerce, bureau of domestic commerce. The value of shipments in November was $282,929 as compared with $416,311 in October. The exports by countries was as follows:*

| Countries | Lathes dollars | Boring and drilling machines dollars | Planers, shapers and slotters dollars | Milling machines dollars |
|---|---|---|---|---|
| Czechoslovakia | ..... | ..... | ..... | 2,329 |
| France | 2,599 | 1,121 | ..... | 3,550 |
| Germany | ..... | ..... | 2,850 | ..... |
| Italy | ..... | 2,713 | ..... | 3,350 |
| Latvia | 500 | ..... | ..... | ..... |
| Norway | 20 | ..... | ..... | ..... |
| Spain | 3,998 | ..... | ..... | 3,909 |
| Sweden | 350 | 5,104 | ..... | ..... |
| Switzerland | 2,957 | ..... | ..... | ..... |
| England | 8,450 | 1,782 | 8,200 | 7,222 |
| Scotland | ..... | 11,035 | ..... | ..... |
| Canada - Maritime provinces | ..... | 63 | ..... | ..... |
| Quebec and Ontario | 11,603 | 21,715 | ..... | 2,777 |
| Prairie provinces | ..... | 125 | ..... | ..... |
| Brit. Col. and Yukon | ..... | 451 | ..... | ..... |
| Guatemala | ..... | 410 | ..... | ..... |
| Nicaragua | 11,250 | ..... | ..... | ..... |
| Panama | ..... | 1,001 | ..... | ..... |
| Salvador | 80 | 60 | 2,156 | ..... |
| Mexico | 26,791 | 3,426 | ..... | 3,300 |
| Newfoundland and Labrador | ..... | 4,002 | ..... | ..... |
| Trinidad and Tobago | 3,490 | ..... | ..... | ..... |
| Cuba | ..... | 163 | 89 | ..... |
| Dominican Republic | ..... | 1,804 | ..... | ..... |
| Argentina | ..... | 183 | ..... | ..... |
| Brazil | 7,109 | 304 | 2,173 | ..... |
| Chile | 3,137 | 1,265 | ..... | ..... |
| Colombia | 838 | ..... | ..... | ..... |
| Paraguay | ..... | 200 | ..... | ..... |
| Peru | 146 | ..... | ..... | ..... |
| British India | ..... | 307 | ..... | ..... |
| Straits Settlements | ..... | ..... | ..... | 802 |
| China | 194 | ..... | ..... | ..... |
| Japan | 63,367 | 13,339 | 4,032 | 6,908 |
| Phil'pine isl'ds | 1,547 | ..... | ..... | ..... |
| Australia | 952 | 4,420 | ..... | 2,724 |
| New Zealand | 1,625 | 406 | ..... | ..... |
| British South Africa | ..... | 156 | ..... | ..... |
| Total | 151,003 | 75,555 | 19,500 | 36,871 |

ufacture and deal in metal stamped goods, by William Newcorn.

AUBURN, N. Y.—D. & P. Culm Burner & Equipment Co. has been incorporated for $50,000 to manufacture and deal in various kinds of equipment, by W. G. Dobbs, T. P. Wiley and H. E. Muggleston, with Turner & Kerr, Albany, as attorney.

BRIDGEHAMPTON, N. Y.—Edwards & Carey, Inc., has been incorporated to manufacture machinery, with $50,000 capital, by E. S. Edwards and J. T. Edwards, Orient and R. F. Carey, Bridgehampton.

BRONX, N. Y.—Anchor Iron Works has been incorporated for $10,000 by J. Schleicher, C. Werner and C. Dalhauser, with A. J. Smith, 217 Greene avenue, Brooklyn, attorney.

BRONX, N. Y.—Cerchio & Kaplan has been incorporated for $25,000 to make autos, by F. Cerchia, S. Kaplan and J. Raffa, with F. Klein, 277 Broadway, as attorney.

BROOKLYN, N. Y.—Broadway Machine Works has been incorporated for $10,000 by F. and A. Kramarische and H. Krische, with M. Schwimer, 957 Broadway, Brooklyn, as attorney.

NEW YORK—Leistner Structural Steel Co. has been incorporated for $2000 by S. Leistner, J. Sipkins and I. Isquith, with M. Lefkort, 1457 Broadway, as attorney.

*Where additional information is presented, reference is made to date of issue in which previous item appeared.*

NEW YORK—Dumitrescu Fire Apparatus Co. has been incorporated for $100,000 by C. and G. M. Dumitrescu and P. Masculin, with L. Bleecker, 249 West Thirty-fourth street, as attorney.

NEW YORK—New York & Brooklyn Casket Co., 160 East 126th street, is having plans prepared for the erection of a plant to replace the structure recently damaged by fire, the loss amounting to more than $200,000.

NEW YORK—A $30,000 addition will be erected by Edward F. Keating Co., 46 Water street, to its plant at 183-87 Cherry street. Mott B. Schmidt, 14 East Forty-sixth street, is architect.

NEW YORK—E. I. S. has been incorporated for $30,000 to manufacture machinery and electrical apparatus, by H. R. Rising and C. R. Neil, with R. E. Swezey, 50 Pine street, as attorney.

NEW YORK—M. Hawkes & Petit has been incorporated for $10,000 to make machinery, by W. M. Hawkes, S. Petit and H. S. Wallin, with R. H. Kittle, 522 Fifth avenue, as attorney.

NEW YORK—Universal Rotary Pump Co. has been incorporated for $20,000 to manufacture and deal in refrigeration machinery, etc., by C. W. Zobel and S. H. Roberts, 322 Ninth street, and E. J. McCormick, 7404 Fifth avenue, Brooklyn.

NEW YORK—Ram Metal Products Co. has been incorporated with 490 shares $100 par value preferred stock and 600 shares no par common, by R. A. Moore, B. Davis and S. Weininger, with M. Greenberger, 1133 Broadway, as attorney.

NEW YORK—H. J. Woltman & Co. has been incorporated with $30,000 capital, 150 shares preferred stock, $100 par value, and 1500 shares $10 par common, to make machinery

# Warehouse Steel Prices

## Quotations in Cents Per Pound at Leading Market Centers

### STEEL BARS

| | |
|---|---|
| Boston | 3.515c |
| Buffalo | 3.55c |
| Chicago | 3.20c |
| Cincinnati | 3.40c to 3.50c |
| Cleveland | 3.36c |
| Detroit | 3.35c |
| Los Angeles | 4.25c |
| New York | 3.54c |
| Philadelphia | 3.47c |
| Pittsburgh | 3.15c |
| San Francisco | 3.75c |
| Seattle | 3.75c |
| St. Louis | 3.35c |
| St. Paul | 3.45c |

### IRON BARS

| | |
|---|---|
| Boston | 3.515c |
| Buffalo | 3.50c |
| Chicago | 3.20c |
| Cincinnati | 3.40c to 3.50c |
| Detroit | 3.35c |
| New York | 3.54c |
| Philadelphia | 3.47c |
| St. Louis | 3.35c |

### SHAPES, STRUCTURAL

| | |
|---|---|
| Boston | 3.615c |
| Buffalo | 3.65c |
| Chicago | 3.30c |
| Cincinnati | 3.50c to 3.60c |
| Cleveland | 3.46c |
| Detroit | 3.45c |
| Los Angeles | 4.10c |
| New York | 3.64c |
| Philadelphia | 3.57c |
| Pittsburgh | 3.25c |
| San Francisco | 3.60c |
| Seattle (large shapes) | 3.75c |
| St. Louis | 3.45c |
| St. Paul | 3.55c |

### PLATES

| | |
|---|---|
| Boston | 3.615c |
| Boston, 3/16-inch | 3.04c |
| Buffalo | 3.65c |
| Chicago | 3.30c |
| Cincinnati | 3.50c to 3.60c |
| Cleveland | 3.46c |
| Detroit | 3.45c |
| Detroit, 3/16-inch | 3.45c |
| Los Angeles | 4.00c |
| New York | 3.64c |
| Philadelphia | 3.57c |
| Philadelphia, 3/16-inch | 3.82c |
| Pittsburgh | 3.25c |
| San Francisco | 3.75c |
| Seattle | 3.75c |
| St. Louis | 3.45c |
| St. Paul | 3.55c |

### NO. 10 BLUE ANNEALED SHEETS

| | |
|---|---|
| Boston, 3/16-inch | 4.515c |
| Buffalo | 4.30c |
| Chicago | 4.00c |
| Cincinnati | 4.10c |
| Cleveland | 3.60c to 4.06c |
| Detroit | 4.15c |
| Los Angeles | 5.00c |
| New York | 4.34c |
| Philadelphia | 4.10c |
| San Francisco | 5.00c |
| Seattle | 5.00c |
| St. Louis | 4.10c |
| St. Paul | 4.25c |

### NO. 28 BLACK SHEETS

| | |
|---|---|
| Boston | 5.00c |
| Buffalo | 5.00c |
| Chicago | 4.70c |
| Cincinnati | 4.90c |
| Cleveland | 4.50c to 4.65c |
| Detroit | 4.85c |
| Los Angeles | 6.20c |
| New York | 4.50c to 4.70c |
| Philadelphia | 5.15c |
| San Francisco | 5.80c |
| Seattle | 6.00c |
| St. Louis | 4.75c |
| St. Paul | 4.95c |

### NO. 28 GALVANIZED SHEETS

| | |
|---|---|
| Boston | 6.00c |
| Buffalo | 6.10c |
| Chicago | 5.85c |
| Cincinnati | 5.90c |
| Cleveland | 5.60c to 5.80c |
| Detroit | 6.00c |
| Los Angeles | 7.00c |
| New York | 5.50c to 5.70c |
| Philadelphia | 6.25c |
| San Francisco | 6.50c |
| Seattle | 7.00c |
| St. Louis | 5.75c |
| St. Paul | 5.75c to 6.00c |

### BANDS

| | |
|---|---|
| Boston | 4.315c |
| Buffalo | 4.35c |
| Chicago | 3.95c |
| Cincinnati | 4.00c to 4.10c |
| Cleveland | 4.01c to 4.16c |
| Detroit | 4.10c |
| Los Angeles | 4.90c |
| New York | 4.39c |
| Philadelphia | 4.27c |
| Pittsburgh | 3.95c |
| San Francisco | 4.50c |
| Seattle | 4.75c |
| St. Paul | 4.20c |

### HOOPS

| | |
|---|---|
| Boston | 5.80c |
| Buffalo | 4.65c |
| Chicago | 4.55c |
| Cleveland | 4.01c to 4.16c |
| Detroit | 4.95c |
| New York | 5.19c |
| Philadelphia, 1 inch and wider 20 gage and heavier | 4.27c |
| Pittsburgh | 3.95c |
| Seattle | 5.50c |
| St. Paul | 4.80c |

### COLD ROLLED STEEL

| | |
|---|---|
| Boston (rounds) | 4.35c |
| Boston (shapes) | 4.85c |
| Buffalo (rounds) | 4.45c |
| Buffalo (shapes) | 4.95c |
| Chicago (rounds) | 4.00c |
| Chicago (shapes) | 4.50c |
| Cincinnati (rounds) | 4.25c |
| Cincinnati (shapes) | 4.75c |
| Cleveland (rounds) | 4.10c |
| Cleveland (shapes) | 4.60c |
| Detroit (rounds) | 4.30c |
| Detroit (shapes) | 4.80c |
| Los Angeles (rounds) | 5.60c |
| New York (rounds | 4.40c |
| New York (shapes) | 4.90c |
| Philadelphia (rounds) | 4.35c |
| Philadelphia (shapes) | 4.85c |
| Pittsburgh (rounds) | 4.05c |
| Pittsburgh (sq. hex. and flats) | 4.55c |
| San Francisco (rounds) | 5.50c |
| Seattle (rounds) | 5.50c |
| St. Paul (rounds) | 4.25c |

### WELDED PIPE

Discounts from warehouse, New York City

**Standard Steel Pipe**

| | Black | galvanized |
|---|---|---|
| ⅛-⅜-inch butt | —31 | + 2 |
| ½-inch butt | —41 | —24 |
| ¾-inch butt | —46 | —32 |
| 1/3-inch butt | —48 | —34 |
| 3½-6-inch lap | —44 | —30 |
| 7-8-inch lap | —41 | —11 |
| 9-10-inch lap | —35 | — 8 |
| 11-12-inch lap | —34 | — 6 |

**Wrought Iron Pipe**

| | Black | galvanized |
|---|---|---|
| ⅛-⅜-inch butt | +44 | +78 |
| ½-inch butt | — 4 | +19 |
| ¾-inch butt | —11 | + 9 |
| 1-1½-inch butt | —14 | + 6 |
| 2-inch lap | — 5 | +14 |
| 3-6-inch lap | —11 | + 6 |
| 7-12-inch lap | — 3 | +16 |

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includes immediate shipment of all Iron and Steel materials from Cleveland and Cincinnati

## Warehouses

If you are not receiving our Stock-list we shall be glad to send it to you regularly upon request.

## Upson Works

Open Hearth Steel Bars for special uses. Also a complete line of Bolts and Nuts. Prompt Shipments.

**THE**
**BOURNE-FULLER CO.**
**Iron, Steel**
**Pig Iron**
**Coke**

**CLEVELAND**

**New York** **Chicago**
**San Francisco**
**Cincinnati** **Detroit**

by H. J. Woltman, C. C. Schultz and F. MacGovern, with S. C. Fowler, 15 Broadway, as attorney.

## Business in Canada

VERMILION, ALB.—Vermilion Engineering Works is in the market for a set of small dividing heads; cylinder grinding machine; small bench hand fly press; also two hand die casting machines. Ben Calvert is purchasing agent.

VANCOUVER, B. C.—Granby Consolidated Mining, Smelting & Power Co., Birks building, K. Roem, purchasing agent, is in the market for machinery, tools, and general plant equipment.

VANCOUVER, B. C.—It is reported that International Combustion Engineering Corp, and Vickers, Ltd., have merged and that the company proposes to erect a plant here for the manufacture of engines, boilers, etc.

VANCOUVER, B. C.—Vulcan Iron Works is in the market for one friction saw, to cut up to 15 or 20-inch steel I-beams; one bulldozer, for straightening steel beams up to 24-inch; one angle iron shear, capacity 6 x 6 x ¾-inch; one bull riveter, about 18-inch capacity.

BRIDGEBURG, ONT.—Theron Automatic Oil Burner Co., Ltd., has been incorporated to manufacture oil burners, stoves, furnaces, radiators, ranges, etc., with $100,000 capital, by James E. Humes, Nichols, Ga.; George G. Gregory and Augusta E. Grimm, of Buffalo, N. Y.

COLLINGWOOD, ONT.—The Bishop Direction Indicator Co., Ltd., has been incorporated to manufacture and deal in accessories for automobiles, motors, engines, machines, etc., with $600,000 capital, by William J. Bishop, William A. Scott and Oliver Munro.

COPPER CLIFF, ONT. — International Nickel Co. contemplates erection of sintering plant here to cost $300,000.

GALT, ONT.—Galt Machine & Screw Co., Ltd., has been incorporated to acquire and take over the business and plant now operated by the Galt Machine Screw Co., Ltd., to manufacture machinery, screws, bolts, nuts, washers, tools, dies, and to carry on general foundry and machine shop business with $500,000 capital stock; by Richard W. Roelofson, Carl K. Jansen, Chauncey E. A. Fowler and others.

HAMILTON, ONT.—Burlington Steel Co., Ltd., has been incorporated with $2,300,000 capital by Albert Mearns, Gerald M. Malone and Bertha Simons.

HAMILTON, ONT.—J. P. Porter Co., Ltd., recently formed to manufacture patent fuel from coal screenings and asphalt fuel oil, has leased 5-acre site from the Canadian National railways and will spend between $100,000 and $150,000 on a plant. J. P. Porter and H. L. Ferry are associated in the organization of the company.

KINGSTON, ONT.—Automatic Grinders, Ltd., has been incorporated to carry on business of automatic grinding, with $9000 capital, by Roy M. Campbell, Colin Campbell and William F. Duff.

LONDON, ONT.—Empire Brass Mfg. Co., Ltd., is in the market for No. 1, 2 and 3 manufacturers' equipment collapsible taps; also pipe threading or bolt threading machine, single head capacity up to ¾-inch.

STRATFORD, ONT.—Bennington Electric Co., Ltd., has been incorporated to manufacture and deal in electrical supplies, fittings, etc., with $40,000 capital stock; by William Bennington, Alfred E. Etherington, Roy E. Harris and others.

SUDBURY, ONT.—Plans are being prepared for a machine shop to be erected here by the Sudbury Construction & Machinery Co., to replace one recently damaged by fire with a loss of $18,000.

TORONTO, ONT.—Bennett & Elliott, Ltd., has been incorporated for $200,000 to manufacture and deal in automobiles, motors, carburetors, etc., by John A. Bennett, Leighton Elliott and Warner Wright.

TORONTO, ONT.—Beswick & Co., Ltd., has been incorporated to manufacture and deal in contractors' machinery and equipment, with $40,000 capital by Harry A. Newman, James M. Baird and Frank R. Darrow.

TORONTO, ONT.—W. A. Gibbs & Son, Inc., has been incorporated for $50,000 to manufacture wood, iron and steel products, by William R. Gibbs, Walter A. Gibbs, Holly Oak, Delaware, and Henry A. Piper, Wilmington, Del.

TORONTO, ONT.—The Canadian Locker Co., Ltd., has been incorporated to manufacture metal lockers, cabinets, safety deposit boxes, etc., with $1,000,000 capital, by Mathew L. Foster, Hugh Johnston, Benjamin J. Johnstone and others.

TORONTO, ONT.—Harold Tomlin Motors, Ltd., has been incorporated to manufacture and deal in automobiles, trucks, farm implements, tractors, etc., with $80,000 capital by Harold U. Tomlin, Ernest W. Lawrence and Frederick H. Roberts.

TORONTO—Clarke Bros. Machinists, Ltd., has been incorporated to carry on general machine shop and foundry business and to manufacture tools, machinery, implements, iron, steel and metal products, etc., with $50,000 capital, by William H. McGuire, James A. Boles and Eric G. Moorehouse.

# New Trade Publications

ELECTRIC WIRING DEVICES — The Crouse-Hinds Co., Syracuse, N. Y., has issued a folder describing electrical wiring devices. The folder contains illustrations of the products and installations.

FOUNDRY ENGINEERS—Beecroft & Partners, Ltd., Sheffield, England, have issued a calendar for 1924 on which photographs are reproduced showing the foundry and testing department in which research work for the company's clients is conducted.

BOILER SETTING COATING—The Paul B. Huyette Co., Philadelphia, has issued a number of pamphlets describing a coating for boiler settings, a gage glass protector, stoking tools, an adjustable sprocket rim with chain guide, a special gage glass, and oil filters.

WOODWORKING MACHINERY — Complete catalog, bound in cloth and containing 320 pages, recently has been distributed by the Oliver Machinery Co., Grand Rapids, Mich. All of the products of the company are illustrated and described at length. In addition, exterior and interior views of the plants of the company are shown together with views showing a number of installations of machinery made by this firm. Methods now in use for packing and crating machinery for shipment also are shown.

TUMBLING MILLS—A 32-page booklet recently published by the W. W. Sly Mfg. Co., Cleveland, is devoted to the construction and operation of tumbling mils. The common uses of tumbling mills together with a number of installations are described in detail. Dust arresters also are described and illustrated.

INSULATION—High temperature heat insulation is the subject of a bulletin published by the Philip Carey Co., Cincinnati, describing the materials and methods used in insulating steam pipes and large surfaces. This is the first of a series of technical bulletins on the performance and ability of heat insulating materials being published by this company.

DROP LOCK—A new style drop lock is described in a bulletin of the Ajax Mfg. Co., Cleveland. This device recently was designed and has been adopted as standard equipment for a new bolt heading upsetting forging machine manufactured by this company. Sectional diagrams are included showing the lock installed on the forging machine.

AUTOMATIC MACHINERY—The Baird Machine Co., Bridgeport, Conn. has issued an 8-page folder illustrating some of the special machines that are made to perform various wire and metal forming operations. Tumbling barrels, automatic chucking machines and accessories to the automatic machines made by this company also are shown.

TURBINE BLOWERS—An interesting booklet on hand and stoker-fired turbine blowers has been prepared by the L. J. Wing Mfg. Co., 358 West Thirteenth street, New York. This is a publication of 24 pages and contains engineering data on the application of these blowers to hand fired boilers and to underfeed and chain grate stokers. The booklet is well illustrated.

FORGES—The Buffalo Forge Co., Buffalo, N. Y., recently has published an 80-page booklet describing and illustrating its many products including forges, hand blowers, electric forge blowers, drilling machines, power blowers, exhaust fans, punches, shears, bar cutters, bending machines, tire upsetters, stationary forge shop equipment, ventilating fans, drying and mechanical draft apparatus.

BELTING—The Goodyear Tire & Rubber Co., Akron, O., has issued a handbook on conveyor and elevator belting. In the handbook are outlined certain principles of design and operation applying to all belt conveyors and belt elevators, which if carefully observed, should insure long wear and satisfactory service. The book is well illustrated and contains a number of working tables.

GEARS—The Grant Gear Works, 151 Pearl street, Boston, recently has published a treatise on gears written by George B. Grant. The booklet is useful for reference work by classes in drafting and technical schools and as a common working tool by draftsmen, patternmakers and machinists. Many working tables containing information of value in designing and building gears are presented. The booklet is well illustrated.

AIRCO
DAVIS APPARATUS
DAVIS-BOURNONVILLE CO.

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## FOR OXYACETYLENE WELDING AND CUTTING

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ECONOMY

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**Manufacturer of Airco Oxygen — Airco Acetylene — Airco-Davis-Bournonville Welding and Cutting Apparatus and Supplies, Acetylene Generators, and Specially Designed Machines for Automatic Welding and Cutting— Nitrogen, Argon and other Airco Atmospheric Gas Products**

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# Iron and Steel Scrap Prices

**CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER**

## Steel Works Scrap

### HEAVY MELTING STEEL

| | |
|---|---|
| Birmingham | 14.00 to 14.50 |
| Boston (dealers) | 15.00 to 16.00 |
| Buffalo | 20.50 to 21.00 |
| Chicago | 18.25 to 18.75 |
| Cleveland | 19.50 to 20.50 |
| Cincinnati | 17.50 to 18.00 |
| Detroit (dealers) | 18.00 to 18.50 |
| Eastern Pennsylvania | 20.00 |
| New York (dealers) | 15.50 to 16.00 |
| Pittsburgh | 22.50 to 23.00 |
| St. Louis | 17.50 to 18.00 |
| Valleys | 21.50 to 22.00 |
| No. 1 railroad steel New York (dealers) | 15.75 to 16.25 |

### COMPRESSED SHEETS

| | |
|---|---|
| Buffalo | 19.00 to 19.50 |
| Chicago | 15.00 to 15.50 |
| Cleveland | 18.00 to 18.50 |
| Detroit (dealers) | 16.00 to 16.50 |
| Pittsburgh | 20.50 to 21.00 |
| Valley | 19.00 to 19.50 |

### BUNDLED SHEETS

| | |
|---|---|
| Buffalo | 14.50 to 15.00 |
| Cincinnati | 13.00 to 13.50 |
| Cleveland | 15.00 to 15.25 |
| Detroit | 12.50 to 13.00 |
| Eastern Pennsylvania | 16.00 to 16.50 |
| Pittsburgh | 18.50 to 19.00 |
| St. Louis | 11.00 to 11.50 |
| Valley | 16.25 to 16.50 |

### SHEET CLIPPINGS, LOOSE

| | |
|---|---|
| Chicago | 12.00 to 12.50 |
| Detroit | 11.50 to 12.00 |

### STEEL RAILS, SHORT

| | |
|---|---|
| Birmingham | 12.00 to 13.00 |
| Boston (dealers) | 15.00 to 16.00 |
| Chicago | 20.50 to 21.00 |
| Cincinnati | 21.00 to 21.50 |
| Cleveland | 18.50 to 19.00 |
| St. Louis | 20.50 to 21.00 |

### STOVE PLATE

| | |
|---|---|
| Birmingham | 17.00 to 17.50 |
| Boston (consumers) | 16.50 to 17.00 |
| Buffalo | 18.00 to 18.50 |
| Pittsburgh | 16.00 to 16.50 |
| Chicago | 20.50 to 21.00 |
| Cincinnati (net iron) | 13.50 to 14.00 |
| Cleveland | 19.50 to 20.00 |
| Detroit (net ton) (dealers) | 15.50 to 16.00 |
| Eastern Pennsylvania | 17.50 to 18.00 |
| New York (dealers) | 14.00 to 14.50 |
| Pittsburgh | 17.00 to 17.50 |
| St. Louis | 19.50 to 20.00 |

### LOW PHOSPHORUS

| | |
|---|---|
| Buffalo | 24.00 to 25.00 |
| Cincinnati | 17.50 to 18.00 |
| Eastern Pennsylvania | 24.00 to 25.00 |
| Pitts., billets and bloom crops | 24.50 to 25.50 |

### SHOVELING STEEL

| | |
|---|---|
| Chicago | 18.00 to 18.50 |
| Pittsburgh | 17.50 to 18.00 |
| St. Louis | 17.25 to 17.75 |

### KNUCKLES, COUPLERS, SPRINGS

| | |
|---|---|
| Chicago | 21.00 to 21.50 |
| Eastern Pennsylvania | 23.00 to 23 50 |
| Pittsburgh | 24.00 to 24.50 |
| St. Louis | 21.50 to 22.00 |

### FROGS, SWITCHES, GUARDS

| | |
|---|---|
| Chicago | 18.25 to 18.75 |
| Eastern Pennsylvania | 20.00 |
| St. Louis | 18.25 to 18.75 |

### BOILER PLATE, CUT

| | |
|---|---|
| St. Louis | 12.25 to 12.75 |

### ANGLE BARS—STEEL

| | |
|---|---|
| Chicago | 18.75 to 19.25 |
| St. Louis | 18.50 to 19.00 |

## Iron Mill Scrap

### RAILROAD WROUGHT

| | |
|---|---|
| Birmingham | 12.00 to 13.00 |
| Boston dealers) | 14.50 to 15.00 |
| Buffalo | 18.00 to 19.00 |
| Cleveland, No. 1 | 17.50 to 17.75 |
| Chicago, No. 1 | 17.50 to 18.00 |
| Chicago, No. 2 | 18.25 to 18.75 |
| Cincinnati No. 1 | 14.50 to 15.00 |
| Detroit, No. 2 | 18.00 to 18.50 |
| Eastern Pennsylvania | 22.00 to 23.00 |
| New York, No. 1 (dealers) | 17.00 to 17.50 |
| Pittsburgh, No. 1 | 17.50 to 18.00 |
| Pittsburgh, No. 2 | 22.50 to 23.00 |
| St. Louis, No. 1 | 17.50 to 18.00 |
| St. Louis, No. 2 | 17.50 to 18.00 |

### WROUGHT PIPE

| | |
|---|---|
| Boston (dealers) | 12.50 to 13.00 |
| Buffalo | 14.50 to 15.00 |
| Eastern Pennsylvania | 20.00 |
| New York (dealers) | 13.75 to 14.25 |

### YARD WROUGHT

| | |
|---|---|
| Boston | 14.00 to 14.50 |
| Eastern Pennsylvania | 20.00 to 21.00 |

### CITY WROUGHT

| | |
|---|---|
| New York, long | 16.00 to 16.50 |

### BUSHELING

| | |
|---|---|
| Buffalo | 18.50 to 19.00 |
| Chicago, No. 1 | 16.25 to 17.00 |
| Chicago, No. 2 | 11.25 to 11.75 |
| Cincinnati, No. 1 | 13.50 to 14.00 |
| Cleveland, No. 1 | 15.75 to 16.00 |
| Cleveland, No. 2 | 14.50 to 15.00 |
| Detroit, No. 1 | 13.00 to 13.50 |
| Detroit, No. 2 (new) | 14.00 to 14.50 |
| Detroit, No. 2 (old) | 10.50 to 11 00 |
| Eastern Pennsylvania | 16.00 to 17.00 |
| Pittsburgh, No. 1 | 18.50 to 19.00 |
| St. Louis, No. 1 | 17.00 to 17.50 |

### MACHINE SHOP TURNINGS

| | |
|---|---|
| Birmingham | 7.00 to 9.00 |
| Boston (dealers) | 11.00 to 11.50 |
| Buffalo | 14.00 to 14.50 |
| Chicago | 11.50 to 12.00 |
| Cincinnati | 11.50 to 12.00 |
| Cleveland | 16.25 to 16.50 |
| Detroit (dealers) | 12.50 to 13.00 |
| Eastern Pennsylvania | 16.00 to 16.50 |
| New York (dealers) | 12.25 to 12.75 |
| Pittsburgh | 16.50 to 17.00 |
| St. Louis | 10.50 to 11.00 |
| Valleys | 15.00 to 15.25 |

### CAST IRON BORINGS

| | |
|---|---|
| Birmingham (chemical) | 16.00 to 17.00 |
| Birmingham (plain) | 9.00 to 10.00 |
| Boston (chemical) | 12.00 to 12.50 |
| Boston (dealers) | 11.00 to 11.50 |
| Buffalo | 14.50 to 15.00 |
| Chicago | 14.50 to 15.00 |
| Cincinnati | 13.00 to 13.50 |
| Cleveland | 17.25 to 17.50 |
| Detroit (dealers) | 12.75 to 13.25 |
| Eastern Pennsylvania (chem.) | 18.00 to 18.50 |
| Eastern Pennsylvania | 16.00 to 16.50 |
| New York (dealers' price) | 12.25 to 12.75 |
| Pittsburgh | 17.50 to 18.00 |
| St. Louis | 14.00 to 14.50 |
| Valleys | 16.25 to 16.75 |

### MIXED BORINGS AND TURNINGS
(For blast furnace use)

| | |
|---|---|
| Boston (dealers) | 11.00 to 11.50 |
| Cleveland | 17.00 to 17.25 |
| Detroit (dealers) | 12.50 to 13.00 |
| Eastern Pennsylvania | 15.00 to 16.00 |
| New York (dealers) | 12.25 to 12.75 |

### IRON AXLES

| | |
|---|---|
| Birmingham | 21.00 to 22.00 |
| Boston (consumers) | 31.00 to 32.00 |
| Buffalo | 30.00 |
| Chicago | 29.50 to 30.00 |
| Cincinnati | 24.00 to 24.50 |
| Eastern Pennsylvania | 26.00 to 30.00 |
| New York (dealers) | 25.75 to 26.25 |
| St. Louis | 29.50 to 30.00 |

### IRON RAILS

| | |
|---|---|
| Buffalo | 21.00 to 22.00 |
| Chicago | 21.00 to 21.50 |
| Cincinnati | 16.50 to 17.00 |
| St. Louis | 17.50 to 18.00 |

### PIPES AND FLUES

| | |
|---|---|
| Chicago | 14.25 to 14.75 |
| Cincinnat | 11.50 to 12.00 |
| Cleveland | 15.25 to 15.75 |
| St. Louis | 13.75 to 14.25 |

### RAILROAD GRATE BARS

| | |
|---|---|
| Buffalo | 17.50 to 18.00 |
| Chicago | 18.75 to 19.25 |
| Cleveland | 19.50 to 20.00 |
| Eastern Pennsylvania | 17.50 to 18.50 |
| New York (dealers) | 14.25 to 14.75 |
| St. Louis | 19.25 to 19.75 |

### FORGE FLASHINGS

| | |
|---|---|
| Boston (dealers) | 10.50 to 11.00 |
| Chicago, small | 13.00 to 13.50 |
| Cleveland, small | 15.00 to 15.25 |
| Cleveland, large | 14.50 to 14.75 |
| Detroit (dealers) | 12.50 to 13.00 |

### FORGE SCRAP

| | |
|---|---|
| Boston (dealers) | 10.50 to 11.00 |
| Chicago | 18.00 to 18.75 |
| Eastern Pennsylvania | 16.00 to 16.50 |

### ARCH BARS AND TRANSOMS

| | |
|---|---|
| Chicago | 22.00 to 22.50 |
| St. Louis | 24.00 to 24.50 |

### ANGLE BARS—IRON

| | |
|---|---|
| Chicago | 22.00 to 22.50 |
| St. Louis | 24.00 to 24.50 |

## Iron and Steel Works Scrap

### AXLE TURNINGS

| | |
|---|---|
| Boston (dealers) | 11.00 to 11.50 |
| Buffalo | 16.00 to 16.50 |
| Chicago | 16.00 to 16.50 |
| Cleveland | 17.00 to 17.25 |
| Eastern Pennsylvania | 16.00 to 16.50 |
| Pittsburgh | 19.00 to 19.50 |
| St. Louis | 14.00 to 14.50 |

### STEEL CAR AXLES

| | |
|---|---|
| Birmingham | 19.00 to 20.00 |
| Boston (consumers) | 20.00 to 21.00 |
| Buffalo | 21.00 to 22.00 |
| Chicago | 21.50 to 22.00 |
| Cleveland | 22.00 to 24.00 |
| Eastern Pennsylvania | 25.00 to 26.00 |
| New York (dealers) | 18.00 to 18.50 |
| Pittsburgh | 24.00 to 24.50 |
| St. Louis | 22.50 to 23.00 |

### SHAFTING

| | |
|---|---|
| Boston (consumers) | 21.00 to 22.00 |
| Chicago | 24.00 to 24.50 |
| Eastern Pennsylvania | 23.00 to 25.00 |
| New York (dealers) | 17.25 to 18.25 |
| St. Louis | 23.00 to 23.50 |

## Iron Foundry Scrap

### CAR WHEELS

| | |
|---|---|
| Birmingham, tram car | 18.00 to 19.00 |
| Birmingham, iron | 13.00 to 14.00 |
| Boston (consumers)6 | 20.00 to 20.50 |
| Buffalo | 20.50 to 21.00 |
| Chicago, iron | 21.00 to 21.50 |
| Cincinnati | 15.50 to 16.00 |
| Eastern Pennsylvania | 19.50 to 20.50 |
| New York iron (dealers) | 15.75 to 16.25 |
| Pittsburgh, iron | 21.00 to 21.50 |
| Pittsburgh, steel | 24.00 to 24.50 |
| St. Louis, iron | 20.00 to 20.50 |

### NO. 1 CAST SCRAP

| | |
|---|---|
| Birmingham, cupola | 19.50 to 20.00 |
| Boston (consumers) | 22.50 to 23.00 |
| Buffalo | 20.00 to 20.50 |
| Chicago, cupola | 22.50 to 23.00 |
| Cincinnati No. 1 machinery cupola (net tons) | 21.00 to 21.50 |
| Cleveland, cupola | 22.00 to 22.50 |
| Detroit (net tons) (dealers) | 18.00 to 18.50 |
| Eastern Pennsylvania, cupola | 20.50 to 21.50 |
| New York, cupola (dealers) | 17.25 to 17.75 |
| Pittsburgh, cupola | 21.00 to 21.50 |
| San Francisco | 25.00 to 26.00 |
| St. Louis, railroad | 21.50 to 22.00 |
| St. Louis, agricultural | 21.00 to 21.50 |
| Valleys | 22.00 to 23.00 |

### HEAVY CAST

| | |
|---|---|
| Boston (consumers) | 19.50 to 20.00 |
| Buffalo (breakable) | 17.00 to 17.50 |
| Cleveland | 17.50 to 17.75 |
| Detroit (automobile) (net ton) | 22.50 to 23.00 |
| Eastern Pennsylvania | 18.50 to 19.00 |
| New York (dealers) | 16.75 to 17.25 |
| Pittsburgh | 19.50 to 20.00 |

### MALLEABLE

| | |
|---|---|
| Boston (railroad) | 19.00 to 20.00 |
| Buffalo | 22.00 to 23.00 |
| Chicago, railroad | 21.50 to 22.00 |
| Chicago, agricultural | 20.50 to 21.50 |
| Cincinnati, agricultural | 17.00 to 17.50 |
| Cincinnati, railroad | 17.00 to 17.50 |
| Cleveland, agricultural | 20.50 to 21.00 |
| Cleveland, railroad | 21.50 to 21.75 |
| Detroit (dealers) | 18.00 to 18.50 |
| Eastern Pennsylvania, railroad | 17.00 to 18.00 |
| Pittsburgh, railroad | 19.50 to 20.00 |
| St. Louis, agricultural | 18.50 to 19.00 |
| St. Louis, railroad | 18.75 to 19.25 |

## Miscellaneous Scrap

### RAILS FOR ROLLING
5 feet and over

| | |
|---|---|
| Birmingham | 16.00 to 16.50 |
| Boston (dealers) | 16.00 to 16.25 |
| Chicago | 20.00 to 20.50 |
| Cleveland | 20.00 to 21.00 |
| Detroit | 17.50 to 18.00 |
| Eastern Pennsylvania | 21.00 to 22.00 |
| New York (dealers) | 17.25 to 17.75 |
| Pittsburgh district | 23.00 to 23.50 |
| St. Louis | 19.00 to 19.50 |

### LOCOMOTIVE TIRES

| | |
|---|---|
| Chicago | 20.00 to 21.00 |
| St. Louis | 18.50 to 19.00 |

### LOW PHOSPHORUS PUNCHINGS

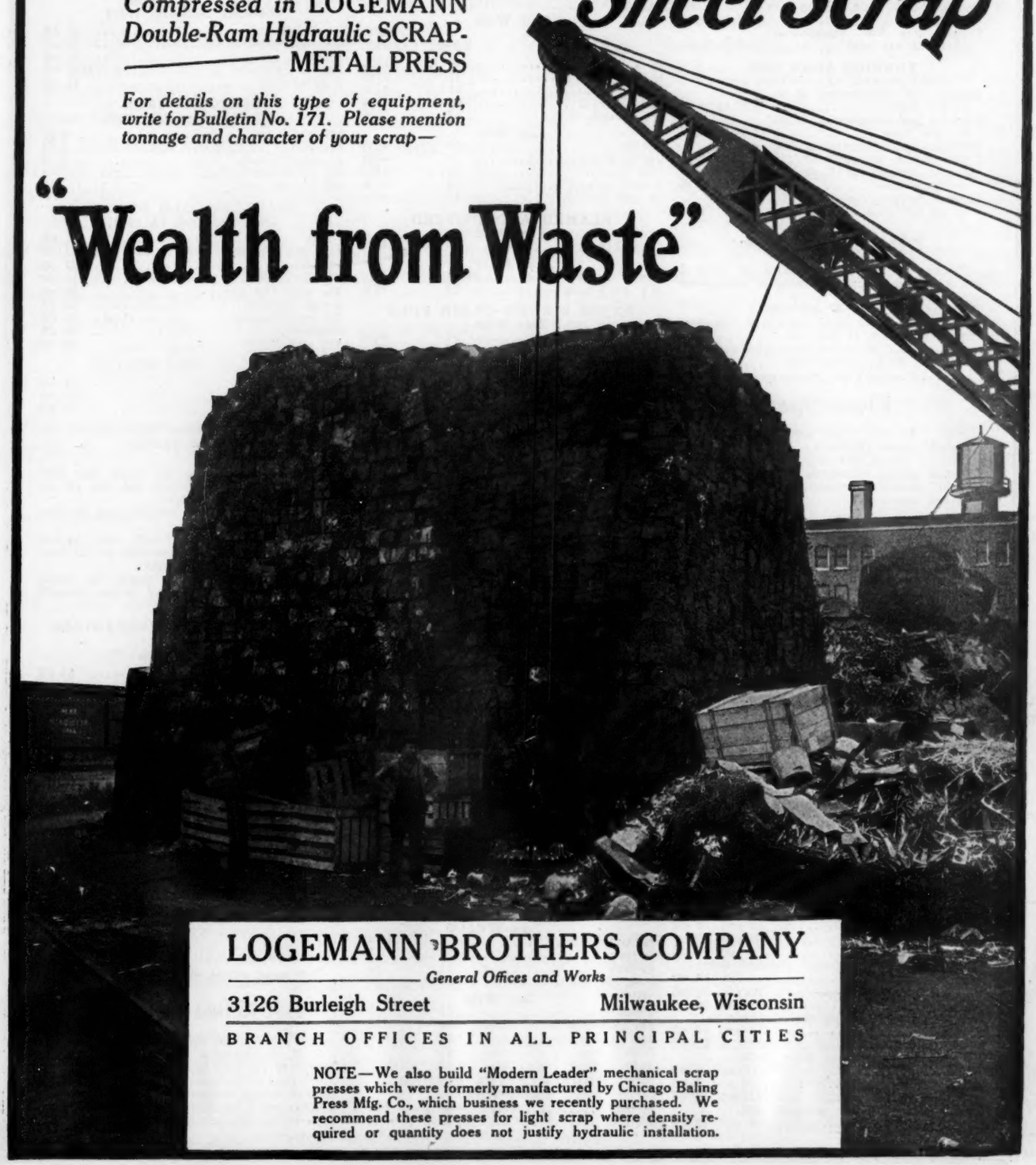
| | |
|---|---|
| Chicago | 19.50 to 20.00 |
| Eastern Pennsylvania | 23.00 to 24.00 |
| Pittsburgh | 24.00 to 24.50 |

# Almost 2000 Tons - of "LOGEMANN HYDRAULIC-COMPRESSED" Sheet Scrap

*Compressed in* LOGEMANN *Double-Ram Hydraulic* SCRAP-METAL PRESS

*For details on this type of equipment, write for Bulletin No. 171. Please mention tonnage and character of your scrap—*

"Wealth from Waste"



LOGEMANN BROTHERS COMPANY

*General Offices and Works*

3126 Burleigh Street Milwaukee, Wisconsin

BRANCH OFFICES IN ALL PRINCIPAL CITIES

NOTE—We also build "Modern Leader" mechanical scrap presses which were formerly manufactured by Chicago Baling Press Mfg. Co., which business we recently purchased. We recommend these presses for light scrap where density required or quantity does not justify hydraulic installation.

# Iron and Steel Prices

## Iron Ore

**LAKE SUPERIOR ORES**
Per Gross Ton Lower Lake Ports

Old range bessemer, 55 per cent iron. $6.45
Mesabi bessemer, 55 per cent iron. 6.20
Old Range nonbessemer, 51½ per cent iron. 5.70
Mesabi nonbessemer, 51½ per cent iron. 5.55

**EASTERN LOCAL ORES**
Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 53 to 63 per cent. 10.00 to 11.00
Copper free low phosphorus 53 to 63 per cent. 13.25 to 16.50

**FOREIGN IRON ORE**
Cents per unit, c.i.f. Atlantic ports

Spanish low phosphorus, 52 to 54 per cent. 9.00 to 10.00
Algerian low phosphorus, 52 to 54 per cent. 10.00 to 10.50
Swedish and Norwegian low phosphorus, 68 per cent. 11.00 to 12.00
Swedish foundry or basic, 66 to 68 per cent. 9.25 to 10.00
Spanish foundry or basic, 50 to 54 per cent. 9.00

## Manganese Ore

Prices do not include duty at rate 1 per cent per pound of metallic manganese contained.

Brazilian, minimum 47 per cent. 40 to 42 cents c.i.f. tidewater
Indian, minimum 47 per cent. 40 to 42 cents c.i.f. tidewater
Caucasian, 53 to 55 per cent. 46 cents c.i.f. tidewater

## Fluor Spar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton. $19.75 to 23.50
Washed gravel, imported, duty paid eastern tidewater, per gross ton. 20.60 to 21.10

## Rivets

Structural rivets, Pittsburgh 2.75c to 2.90c
Rivets, 7/16-in. and smaller. 65, 10 and 5 off

## Nuts and Bolts

(Up to 1¼ and 1⅛ inches inclusive)

Hot pressed square or hexagon blank. $4.50 off list
Hot pressed square or hexagon tapped. $4.50 off list
Cold punched square or hexagon blank. $4.00 off list
Cold punched, square or hexagon. $4.00 off list
Cold punched semifinished hexagon nuts ⅝-inch and larger. 75 and 5 off
Cold punched semifinished hexagon nuts 9/16-inch and smaller. 80 and 5 off
Price f.o.b. Pittsburgh, packages of 50.

**CARRIAGE BOLTS**
(¾ x 6 inches, smaller and shorter)

Rolled thread. 60 and 10 off
Cut thread. 60 off
Larger and longer. 60 off

**MACHINE BOLTS**
(⅜ x 4 inches, hot pressed nuts)

Rolled thread. 60, 10 and 10 off
Cut thread. 60 and 10 off
Larger and longer. 60 and 10 off
((⅜ x 4 inches, cold punched nuts)
Cut thread. 50, 10 off
Larger and longer. 50, 10 off
Lag screws. 65 and 10 off
Plow bolts Nos. 1, 2 and 3 heads. 50 and 10 off
4 to 10 heads. 50-10 + 20 off
Flat and round head stove bolts. 75, 10 and 5 off
Other stove bolts. 75 and 5 off
Tap bolts. 25 and 10 off
Bolt ends with hot pressed nuts. 60 and 10 off
Bolt ends with cold punched nuts. 50 and 10 off
Blank bolts. 60 and 10 off
Rough stud bolts with nuts. 50 off

## Washers

Wrought washers. $5.00 to $5.50 off

## Steel Pipe

(Effective April 19, 1923)
Pittsburgh basing discounts, jobbers' carloads.

| | Black | Galvanized |
|---|---|---|
| **Butt Weld** | | |
| ⅛-inch | 45 | 19½ |
| ¼ and ⅜-inch | 51 | 25½ |
| ½-inch | 56 | 42½ |
| ¾-inch | 60 | 48½ |
| 1 to 3-inch | 62 | 50½ |
| **Lap Weld** | | |
| 2-inch | 55 | 43½ |
| 2½ to 6-inch | 59 | 47½ |
| 7 to 8-inch | 56 | 43½ |
| 9 and 10-inch | 54 | 41½ |
| 11 and 12-inch | 53 | 40½ |
| **REAMED AND DRIFTED** | | |
| **Butt Weld** | | |
| 1 to 3-inch | 60 | 48½ |
| **Lap Weld** | | |
| 2-inch | 53 | 41½ |
| 2½ to 6-inch | 57 | 45½ |
| **EXTRA STRONG—PLAIN ENDS** | | |
| **Butt Weld** | | |
| ⅛-inch | 41 | 24½ |
| ¼ and ⅜-inch | 47 | 30½ |
| ½-inch | 53 | 42½ |
| ¾-inch | 58 | 47½ |
| 1 to 1½-inch | 60 | 49½ |
| 2 to 3-inch | 61 | 50½ |
| **Lap Weld** | | |
| 2-inch | 53 | 42½ |
| 2½ to 4-inch | 57 | 46½ |
| 4½ to 6-inch | 56 | 45½ |
| 7 to 8-inch | 52 | 39½ |
| 9 and 10-inch | 45 | 32½ |
| 11 and 12-inch | 44 | 31½ |
| **DOUBLE EXTRA STRONG** | | |
| **Butt Weld** | | |
| ½-inch | 42 | 32½ |
| ¾ to 1½-inch | 45 | 35½ |
| 2 to 2½-inch | 47 | 37½ |
| **Lap Weld** | | |
| 2-inch | 41 | 32½ |
| 2½ to 4-inch | 43 | 34½ |
| 4½ to 6-inch | 42 | 33½ |
| 7 to 8-inch | 38 | 25½ |

## Wrought Iron Pipe

(Effective Jan. 23, 1923)
Pittsburgh basing discounts, jobbers, carloads

| | | |
|---|---|---|
| **THREADS AND COUPLINGS** | | |
| **Butt Weld** | | |
| ¼ and ⅜-inch | +11 | +29 |
| ½-inch | 22 | 2 |
| ¾-inch | 28 | 11 |
| 1 to 1½-inch | 30 | 13 |
| **Lap Weld** | | |
| 1¼ and 1½-inch | Upon application | |
| 2-inch | 23 | 7 |
| 2½ to 6-inch | 26 | 11 |
| 3 to 6-inch | 28 | 13 |
| 7 to 12-inch | 26 | 11 |
| **PLUGGED AND REAMED** | | |
| Two points less than above | | |
| **EXTRA STRONG, PLAIN ENDS** | | |
| **Butt Weld** | | |
| ¼ and ⅜-inch | +19 | +54 |
| ½-inch | 21 | 7 |
| ¾-inch | 28 | 12 |
| 1 to 1½-inch | 30 | 14 |
| **Lap Weld** | | |
| 2-inch | 23 | 9 |
| 2½ to 4-inch | 29 | 15 |
| 4½ to 6-inch | 28 | 14 |
| 7 to 8-inch | 21 | 7 |
| 9 to 12-inch | 16 | 2 |
| **DOUBLE EXTRA STRONG** | | |
| **Butt Weld** | | |
| ½-inch | +47½ | +59½ |
| ¾-inch | +28 | +40 |
| 1-inch | +34 | +46 |
| 1¼-inch | +28 | +40 |
| 1½-inch | +27 | +39 |
| **Lap Weld** | | |
| 2 and 2½-inch | +13 | +25 |
| 3 to 4-inch | + 8 | +17 |
| 4½ to 6-inch | + 9 | +18 |
| 8-inch | +12 | |

## Boiler Tubes

L. C. L. discounts. C. L. 4 points larger

**STEEL (Lap welded)**
(Effective April 19, 1923)

2 and 2¼-inch. 23 off
2½ and 2¾-inch. 33 off
3-inch. 36 off
3¼ to 3¾-inch. 38½ off
4 to 13-inch. 42 off

**CHARCOAL IRON**
(Effective April 12, 1923)

1½-inch. +22
1¾-inch. +12
2 and 2¼-inch. + 2
2½ to 3-inch. 3
3¼ to 4½-inch. 5

**SEAMLESS COLD DRAWN**
(Effective April 19, 1923)

1-inch. 51 off
1¼ and 1½-inch. 43 off
1¾-inch. 27 off
2 and 2¼-inch. 18 off
2½ and 2¾-inch. 28 off
3 and 3¼-inch. 32 off
3½ and 3¾-inch. 33 off
4-inch. 37 off
4½ and 5-inch. 29 off

**SEAMLESS HOT ROLLED**

3 and 3¼-inch. 34 off
3½ and 3¾-inch. 35 off
4-inch. 39 off

**SEAMLESS STEEL MERCHANT BOILER TUBES**

Extras:

Add $8 per net ton for more than four gages heavier than standard and add 10 per cent to theoretical weight.

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

**SEAMLESS STEEL MECHANICAL TUBING**

Base Discounts

Carbon, 0.10 to 0.20 per cent. 83 off
Carbon, 0.30 to 0.40 per cent. 81 off
Carbon, 0.40 to 0.50 per cent. net price
Plus differentials and extras for cutting.

**SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES**
(Effective April 19, 1923)

| Outside diameter | Net prices per foot f.o.b. Pittsburgh Gage | Price |
|---|---|---|
| 2-inch | 12-gage | 15c |
| 2-inch | 12-gage | 15c |
| 2-inch | 11-gage | 16c |
| 2-inch | 10-gage | 17c |
| 2¼-inch | 12-gage | 17c |
| 2¼-inch | 11-gage | 18c |
| 2¼-inch | 10-gage | 20c |
| 3-inch | 7-gage | 35c |
| 1½-inch | 9-gage | 15c |
| 5⅜-inch | 9-gage | 55c |
| 5½-inch | 9-gage | 57c |

Plus usual extras for forming and for long lengths.

## Hot Rolled Alloy Steels

Prices per pound, Pittsburgh

S. A. E. Series—
2300 (3½ per cent nickel). 5.00 to 5.25c
3100 (nickel chromium). 4.00 to 4.25c
6100 (chrome vanadium). 5.00c
6100 (chrome vanadium spring) 4.75c
9250 (Silico manganese spring) 3.90c